

**DECISION RECORD**  
**Ballard Petroleum Holdings, LLC, Drake Federal 31-29 HT**  
**Environmental Assessment (EA), WY-070-EA11-253**  
**Buffalo Field Office, Bureau of Land Management**

**DECISION:**

The BLM approves Ballard Petroleum Holdings, LLC’s (Ballard) 1 application for permit to drill (APD) in the Drake Federal 31-29 HT well as described in Alternative B of the EA, WY-070-EA11-253. This approval includes the well’s associated infrastructure.

**Compliance.** This decision complies with:

- Federal Land Policy and Management Act of 1976 (FLPMA) (43 USC 1701).
- Mineral Leasing Act of 1920 (MLA) (30 U.S.C. 181); to include On Shore Order No. 1.
- National Environmental Policy Act of 1969 (NEPA) (42 USC 4321).
- Buffalo Resource Management Plan (RMP) and Record of Decision (ROD) 1985, 2001, 2003, 2011.
- DOI Order 3310.

**Consultation.** This decision considered:

- BLM Instruction Memorandum No. 2009-078, Processing Oil and Gas Application for Permit to Drill for Directional Drilling into Federal Mineral Estate from Multiple-Well Pads on Non-Federal Surface and Mineral Locations, 2009.
- Wyoming BLM State Director Review, SDR No. WY-2011-010, EOG Resources, Inc. v. Pinedale Field Office, 2011.

BLM summarizes the details of the approval of Alternative B, below. The project description, specific changes made at the onsites, and site-specific mitigation measures, are in the EA.

**Well Site:**

BLM approves the following 1 APD and associated infrastructure:

<b>Well Name &amp; Number</b>	<b>QTR</b>	<b>Sec.</b>	<b>T</b>	<b>R</b>	<b>Lease #</b>
Drake Federal 31-29 HT	SESE	29	43N	73W	WYW139661

**Limitations:** There are no denials or deferrals. Also see the conditions of approval (COAs).

**THE FINDING OF NO SIGNIFICANT IMPACT (FONSI).** Analysis of Alternative B of the EA, WY-070-EA11-253, and the FONSI found the Drake Federal 31-29 HT will have no significant impacts on the human environment beyond those described in the PRB FEIS, thus an EIS is not required.

**COMMENT OR NEW INFORMATION SUMMARY.**

BLM internally scoped this application. BLM experience in the PRB (outside of the Fortification Creek Planning Area) revealed virtually no public input or discovery of new issues other than those revealed after rigorous public scoping during development of the PRB Oil and Gas Project.

**DECISION RATIONALE:**

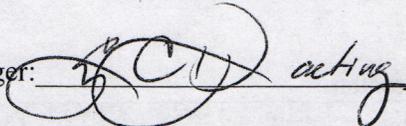
BLM bases the decision authorizing Alternative B, as summarized above, on:

1. Ballard and BLM included mitigation measures and design features reducing environmental impacts while meeting the project’s need. For a complete description of all site-specific conditions of approval (COAs) associated with this approval, see the COAs, including the recommended surface COAs.

2. The selected alternative will not result in any undue or unnecessary environmental degradation.
3. The selected alternative will help meet the nation's energy needs, and help stimulate local economies by maintaining workforce stability.
4. The Operator committed to:
- Comply with all applicable federal, state, and local laws and regulations.
  - The operator incorporated several measures to alleviate resource impacts into their surface use plan and drilling plan submitted.
5. The operator provided the BLM a true and complete copy of a document in which the owner of the surface authorizes the operator to drill a federal well from non-federal lands, and in which the surface owner or representative guarantees the Department of the Interior (Department), including BLM, access to the non-federal lands to perform all necessary surveys and inspections. (See also, Instruction Memorandum No. 2009-078, p. 2, para 6).
6. The project is clearly lacking in wilderness characteristics as there is no federal surface.

**ADMINISTRATIVE REVIEW AND APPEAL:** This decision is subject to administrative review according to 43 CFR 3165. Request for administrative review of this decision must include information required under 43 CFR 3165.3(b) (State Director Review), including all supporting documentation. Such a request must be filed in writing with the State Director, Bureau of Land Management, P.O. Box 1828, Cheyenne, Wyoming 82003, no later than 20 business days after this Decision Record is received or considered to have been received. Any party who is adversely affected by the State Director's decision may appeal that decision to the Interior Board of Land Appeals, as provided in 43 CFR 3165.4.

Field Manager: \_\_\_\_\_

 acting

Date: \_\_\_\_\_

10/6/14

**FINDING OF NO SIGNIFICANT IMPACT**  
**Ballard Petroleum Holdings, LLC, Drake Federal 31-29 HT**  
**Environmental Assessment (EA), WY-070-EA11-253**  
**Buffalo Field Office, Bureau of Land Management**

**FINDING OF NO SIGNIFICANT IMPACT (FONSI):** Based on the information in the EA, WY-070-EA11-253, which is incorporated here by reference; I find that: (1) the implementation of Alternative B will not have significant environmental impacts beyond those already addressed in the Buffalo Final Environmental Impact Statement (FEIS) 1985, and the Powder River Basin (PRB) FEIS, 2003, to which the EA tiers; (2) Alternative B conforms to the Buffalo Field Office (BFO) Resource Management Plan (RMP) (1985, 2001, 2003); and (3) Alternative B does not constitute a major federal action having a significant effect on the human environment. Thus an EIS is not required. I base this finding on my consideration of the Council on Environmental Quality's (CEQ) criteria for significance (40 CFR 1508.27), both with regard to the context and to the intensity of the impacts described in the EA, and in consideration of Interior Department Order 3310.

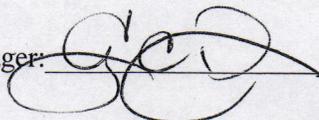
**CONTEXT:** Mineral development is a long-standing and common land use in the PRB. About 42% of the nation's coal comes from the PRB. The PRB FEIS reasonably foreseeable development predicted and analyzed the development of 51,000 CBNG wells and 3,200 oil wells. The additional oil development described in Alternative B is insignificant in the national, regional, and local context.

**INTENSITY:** The implementation of Alternative B will result in beneficial effects in the forms of energy and revenue production however; there will also be adverse effects to the environment. Design features and mitigation measures included in Alternative B will minimize adverse environmental effects. The preferred alternative does not pose a significant risk to public health and safety. The geographic area of project does not contain unique characteristics identified within the 1985 RMP, 2003 PRB FEIS, or other legislative or regulatory processes.

BLM used relevant scientific literature and professional expertise in preparing the EA. The scientific community is reasonably consistent with their conclusions on environmental effects relative to oil and gas development. Research findings on the nature of the environmental effects are not highly controversial, highly uncertain, or involve unique or unknown risks. The PRB FEIS predicted and analyzed oil development of the nature proposed with this project and similar projects. The selected alternative does not establish a precedent for future actions with significant effects. There are no cultural or historical resources present that will be adversely affected by the selected alternative. The project area is clearly lacking in wilderness characteristics as there is no federal surface acres. No species listed under the Endangered Species Act or their designated critical habitat will be adversely affected. The selected alternative will not have any anticipated effects that would threaten a violation of federal, state, or local law or requirements imposed for the protection of the environment.

**ADMINISTRATIVE REVIEW AND APPEAL:** This finding is subject to administrative review according to 43 CFR 3165. Request for administrative review of this finding must include information required under 43 CFR 3165.3(b) (State Director Review), including all supporting documentation. Such a request must be filed in writing with the State Director, Bureau of Land Management, P.O. Box 1828, Cheyenne, Wyoming 82003, no later than 20 business days after this FONSI is received or considered to have been received. Any party who is adversely affected by the State Director's finding may appeal that finding to the Interior Board of Land Appeals, as provided in 43 CFR 3165.4.

Field Manager: \_\_\_\_\_



Date: \_\_\_\_\_

10/6/11

**ENVIRONMENTAL ASSESSMENT (EA), WY-070-EA11-253**  
**Ballard Petroleum Holdings, LLC, Drake Federal 31-29 HT**  
**Buffalo Field Office, Bureau of Land Management**

**1. INTRODUCTION**

This site-specific analysis tiers into and incorporates by reference the information and analysis in the Final Environmental Impact Statement and Proposed Plan Amendment for the Powder River Basin Oil and Gas Project (PRB FEIS), #WY-070-02-065, 2003, the Buffalo Resource Management Plan (RMP) (1985, 2001, 2003, 2011) and the PRB FEIS Record of Decision (ROD) pursuant to 40 CFR 1508.28 and 1502.21. One may review these documents at the BLM Buffalo Field Office (BFO) and on our website.

**1.1. Background**

Ballard Petroleum Holdings, LLC (Ballard) submitted a Notices of Staking (NOS) for the proposed Drake Federal 31-29 HT well.

WELL NAME	QRT/QRT	SECTION	TOWNSHIP	RANGE	NOS RECEIVED
Drake Federal 31-29 HT	SESE	29	43	73	10/08/2010

BLM conducted an NOS onsite on March 29, 2011. BLM sent a NOS post-onsite resource concern letter to Ballard on April 4, 2011. BLM received an application for permit to drill (APD) on May 27, 2011.

**1.2. Need for the Proposed Project**

The need for this project is to determine how and under what conditions to balance natural resource conservation with allowing the operator to exercise lease rights to develop fluid minerals on federal leaseholds as described in their proposed project. Information contained in the application for permit to drill (APD) is an integral part of this EA and is incorporated by reference (CFR 1502.21). The extraction of fluid minerals is important to meeting the nation's energy needs. The fluid mineral leasing programs fall under the authority of the Mineral Leasing Act of 1920, the Federal Land Policy Management Act (FLPMA), and other laws and regulations.

**1.3. Decision to be Made**

The BLM will decide whether or not to approve the proposed development of oil and conventional gas resources on the federal leasehold referred to as Drake Federal 31-29 HT, and if so, under what terms and conditions.

BLM Instruction Memorandum (IM) No. 2009-078 established policy and procedures for processing federal applications for permit to drill (APD) for directional drilling into federal mineral estate from multiple well pads on non-federal locations. In accordance with IM No. 2009-078 drilling, and producing the subject wells is a federal action. Construction, operation, and reclamation of infrastructure on non-federal land are not federal actions.

Drilling and producing mitigation is in Conditions of Approval for Conventional Application for Permit to Drill.

In accordance with IM No. 2009-078 the approval of an APD is a federal undertaking under section 106 of NHPA, even when the resulting impacts are non-federal land. Actions that intentionally, significantly, and adversely affect a historic property with the intent to avoid the requirements of NHPA Section 106 are in violation of NHPA Section 110(k) and require the field office to deny the APD. The BLM's

inspection and enforcement authority and responsibility would include compliance with any mitigation or other conditions established for approval of the APD as a result of the NHPA and ESA consultation process. Cultural mitigation can be found in Conditions of Approval for Conventional Application for Permit to Drill.

It is the BLM's responsibility and obligation to analyze the full effects of the action, and identify mitigation measures, regardless of the BLM's authority to enforce the mitigation. The BLM needs to identify mitigation measures that would reduce or eliminate the effects of a non-federal action when it is a connected action to the BLM proposed action (see the NEPA handbook, section 6.8.2.1.1, connected Non-federal Actions). Identifying mitigation outside of the BLM's jurisdiction serves to alert the other agencies that can implement the mitigation. The probability of the other agencies implementing the mitigation measures is likely to occur, although these agencies may vary specific parameters recommended by the BLM.

Full effects of the action and recommended mitigation measures can be found in the Drake Federal 31-29 HT Surface Use Plan, WY-070-EA11-253 and BLM Recommended Conditions of Approval for Conventional Application for Permit to Drill.

#### **1.4. Scoping and Issues**

The BFO interdisciplinary team (ID team) conducted internal scoping by reviewing the proposed development and project location to identify potentially affected resource and land uses. The ID team identified resources and land uses present and affected by the proposed project. This EA will not discuss resources and land uses that are either not present, not affected, or that the PRB FEIS adequately addressed. The ID team identified important issues for the affected resources to focus the analysis. This EA addresses the project and its site-specific impacts that were unknown and unavailable for review at the time of the PRB FEIS analysis to help the decision maker come to a reasoned decision. Project issues include:

- Soils and vegetation: site stability, reclamation potential, invasive species
- Wildlife: raptor productivity, greater sage-grouse lek occupancy and persistency
- Cultural: National Register eligible sites

These issues are not present, or minimally so, and were sufficiently analyzed in the EIS and therefore not analyzed in this EA:

- Geological resources
- Water resources
- Cave and karst resources
- Vegetation
- Wilderness study areas
- Paleontology
- Visual resources
- Forest, lands, realty
- Renewable energy
- Rights-of-way
- Transportation
- Livestock grazing
- Wild and scenic rivers
- Tribal Treaty rights
- Fire, fuels management, and rehabilitation
- Minerals: locatable, leasable-coal, salable
- Wilderness characteristics
- Areas of critical environmental concern
- Social and economic resources
- Environmental justice

## **2. PROPOSED PROJECT AND ALTERNATIVES**

### **2.1. Alternative A - No Action**

The PRB FEIS considered a No Action Alternative, Volume 1, pp. 2-54 to 2-62. This alternative must also consider and combine the PRB FEIS analysis with the subsequent analysis and development from the adjacent and intermingled POD and 16 wells within 1 mile of this proposal: All Night Creek Add 1 POD, EA-WY-070-03-112, and All Night Creek II POD, EA-WY-107-02-208 (see Table 3.4). This comports to the PRB FEIS which analyzed the reasonably foreseeable development rolling across the PRB of over 51,000 CBNG and 3,200 oil wells. The no action alternative would consist of no new federal wells. This

alternative would deny this APD requiring the operator to resubmit an APD that complies with statutes and the reasonable measures in the PRB RMP ROD in order to lawfully exercise conditional lease rights. This alternative could, through secretarial discretion, suspend the senior leasehold, or could administratively cancel or withdraw the lease if improperly awarded, or seek to cancel the lease through a theory of superior title. It is not possible in the abstract to identify every interest and that is beyond the scope here.

**2.2. Alternative B - Proposed Action**

**Project Name:** Drake Federal 31-29 HT

**Well Name/#/Lease/Location/County:**

Well Name & Number	QTR	SEC	TWN	RNG	Lease #
Drake Federal 31-29 HT	SESE	29	43N	73W	WYW139661

**Operator/Applicant:** Ballard Petroleum Holdings, LLC.

**Surface Owners:** Edra Drake, Drake Family Land Trust

Ballard Petroleum proposes drilling and developing 1 horizontal oil well into federal mineral estate from an existing well pad on a non-federal location. The proposed well is located 21 miles SW of Wright, Wyoming, in southwestern Campbell County. The primary objective is to drill to the Turner Sand Formation at 10,749 feet total vertical distance. The Surface Hole Location is 413’ FNL and 2,127’ FEL (NWNE), Lot 2, Section 29, T43N, R73W. The Bottom Hole Location is 660’ FSL and 660’ FEL (SESE), Lot 16, Section 29, T43N, R73W. See Figure 2.1 below.

Ballard proposes drilling the Drake Federal 31-29 HT well on the existing Drake 31-29 well pad (private surface over private mineral estate). Ballard proposes drilling the well on an expansion to the existing well pad. The drilling and construction of the Drake Federal 31-29 HT will result in a well pad expansion with approximately 0.98 acres of new surface disturbance to the north side of the existing well pad. The well bores will be approximately 165’ apart on the expanded well pad. Ballard will use approximately 3.5 miles of existing improved road.

Drilling, Construction & Production design features include:

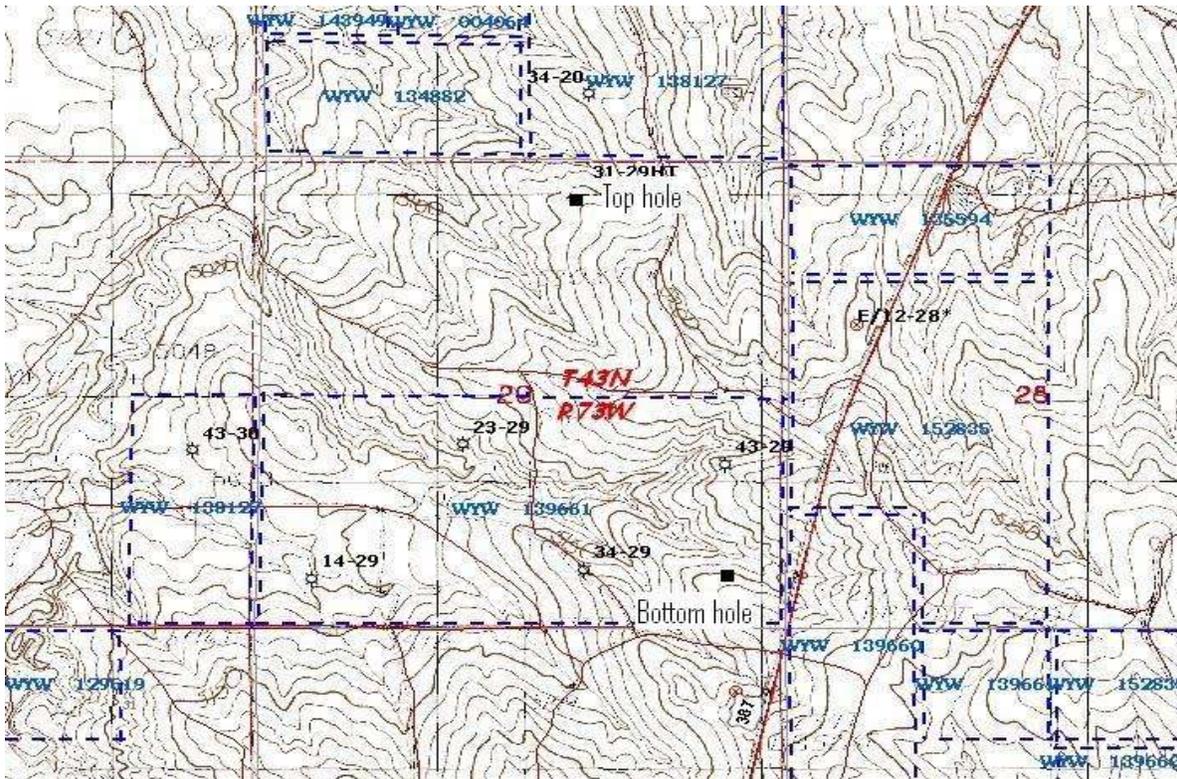
- Ballard Petroleum anticipates completing drilling and construction in 2 years. Drilling and construction is year-round in the region. Weather may cause delays but delays rarely last multiple weeks. Timing limitations in the form of conditions of approval (COAs) and/or agreements with surface owners may impose longer temporal restrictions.
- A road network consisting of existing improved roads.
- An existing above ground power line network.
- Production facilities including a pumping unit, a four tank battery, and 6’D x 20’ L heater treater
- located on the well pad and placed on the cut portion of the location, a minimum of 20 feet from the toe of the back cut.
- All engines will be equipped with an adequate muffler system, decibel level not to exceed 70 decibels at a distance of 200 feet from the exhaust of any muffler.
- No pits at the producing oil well location.

For a detailed description of design features and construction practices associated with the proposed project, refer to the surface use plan (SUP) and drilling plan included with the APD. Also see the subject APD for maps showing the proposed well location and associated facilities described above.

**Table 2.1. Disturbance Summary for Drake Federal 31-29 HT well:**

Facility	Number or Miles	Factor	Disturbance
Existing Engineered Pad	1 (250 ft x 350 ft)	87,500 sq ft	existing
Expansion of Engineered Pad	1 (325 ft x 400 ft)	130,000 sq ft	0.98 acres
Existing Improved Roads No Corridor	3.5 miles	30 ft	existing
Proposed Overhead Power	0		0
<b>Total Surface Disturbance</b>			<b>0.98 acres</b>

**Figure 2.1. Top & Bottom Hole Locations for Drake Federal 31-29HT Horizontal Well**



Recommended mitigation measures can be found in the Drake Federal 31-29 HT Surface Use Plan, WY-070-EA11-253 and BLM Recommended Conditions of Approval for Conventional Application for Permit to Drill. Drilling and producing mitigation can be found in Conditions of Approval for Conventional Application for Permit to Drill.

Implementation of committed mitigation measures in the SUP and drilling plan, in addition to the COAs in the PRB FEIS ROD, as well as changes made at the onsite, are incorporated and analyzed in this alternative.

Additionally, the Operator, in their APD, committed to:

1. Comply with all applicable federal, state and local laws and regulations.
2. Obtain the necessary permits from other agencies for the drilling, completion and production of these wells including water rights appropriations, and relevant air quality permits.

3. The Operator certified he has a surface use agreement with the landowner(s) or bonded. The operator provided the BLM a true and complete copy of a document in which the owner of the surface authorizes the operator to drill a federal well from non-federal lands, and in which the surface owner or representative guarantees the Department of the Interior (Department), including BLM, access to the non-federal lands to perform all necessary surveys and inspections, (see Instruction Memorandum No. 2009-078, p. 2, para 6).
4. The Operator certified that a copy of the SUP was provided to the relevant landowner(s).

**Description of Proposed Mitigation Measures:**

Implementation of committed mitigation measures in the surface use plan of operations and drilling plan, in addition to the attached COAs, would ensure that no adverse environmental impacts would result from approval of the proposed action.

**2.3. Alternatives Considered but Eliminated from Detailed Analysis**

No additional alternatives were considered.

**2.4. Conformance with the Land Use Plan and Other Environmental Assessments**

This proposal does not diverge from the goals and objectives in the Buffalo RMP, 1985, 2001, 2003, 2011 and generally conforms to the terms and conditions of that land use plan, its amendments, and supporting FEISs, 1985, 2003 and Interior Department Order 3310. BLM did not use the rebuttable presumption in the 2005 Energy Policy Act to process this APD via a categorical exclusion to save time; since this EA initiation pre-dated the August 12, 2011 decision by the Federal District Court of Wyoming.

**3. AFFECTED ENVIRONMENT**

This section briefly describes the physical and regulatory environment affecting the project area. Aspects of the affected environment here focus on the major issues. Resources unaffected, or not affected beyond the level analyzed in the PRB FEIS, are outside the scope of this EA.

**Project Area Description**

The proposed project is located approximately 12 miles southwest of Wright, Wyoming, in southwestern Campbell County. The project area is in the PRB geographic area (Wyoming Geographic Landforms Map). Topography in the project area has mild ridgelines, moderately incised arroyos along ephemeral dendritic drainages, and dry lake beds. Elevations in the project area average 5100 feet above sea level. The landform is a combination of bedrock residuum and slope wash deposits. Land uses and other disturbances in the project area include wildlife habitat, livestock grazing, ranching, dry land farming, extensive mineral development, and improved and unimproved roads.

**3.1. Air Quality**

Existing air quality throughout most of the PRB is in attainment with all ambient air quality standards. Specific air quality monitoring in the PRB occurs at 3 Wyoming state sites: Cloud Peak; Thunder Basin (NE of Gillette); and Campbell County (SSW of Gillette). Air quality in rural areas is generally very good (ozone less than 60 parts per billion (ppb), minimal nitrous oxide (NO<sub>x</sub>) and volatile organic compounds (VOCs). However in recent years the region had some ozone ratings between 65 and 70 (ppb) and had a few air quality advisories due to dust largely from coal mining. The area has few and dispersed emission sources (few industrial facilities and residential emissions in the relatively small communities and isolated ranches) and good atmospheric dispersion. This results in relatively low air pollutant concentrations as the area does not have a “bowl-like” topography which may trap low-level ozone layers. Instead the open topography fosters low-level air exchange (high winds). Yet the air quality issue is receiving greater monitoring and regulatory scrutiny in Wyoming since the ozone in the Upper Green River Basin was the

worst in the nation for 13 days in 2011 and had air quality issues since 2005 due, in part, to affects from oil and gas field operations.

Existing air pollutant emission sources in the region include:

- Exhaust emissions (primarily CO and nitrous oxides [NO<sub>x</sub>]) from existing natural gas fired compressor engines used in production of natural gas and CBNG; and, gasoline and diesel vehicle tailpipe emissions of combustion pollutants;
- Dust (particulate matter) generated by vehicle travel on unpaved roads, windblown dust from neighboring areas and road sanding during the winter months;
- Transport of air pollutants from emission sources located outside the region;
- Dust (particulate matter) from coal mines;
- NO<sub>x</sub>, particulate matter, and other emissions from diesel trains; and
- SO<sub>2</sub> and NO<sub>x</sub> from power plants.
- For a description of the 2003-era air quality conditions in the PRB, refer to the PRB Final EIS Volume 1, Chapter 3, pp. 3-291 to 3-299.

### 3.2. Soils, Vegetation & Ecological Sites

The PRB has relatively young soils which developed in alluvium and residuum derived from the Wasatch Formation. Lithology consists of light to dark yellow and tan siltstone and sandstones with minor coal seams. Soils have surface and subsurface textures of silt loam and fine sandy loam. Soil depths vary from deep on lesser slopes to shallow and very shallow on steeper slopes. Soils are generally productive, though varies with texture, slope and other characteristics. Soils differ with topographic location, slope, and elevation. Topsoil depths to be salvaged for reclamation range from 4 to 6 inches on ridges to 8+ inches in bottomland. The dominant soils are fine sandy loams with 0-6% slopes. Soils differ with topographic location, slope, and elevation. Erosion potential varies depending on the soil type, vegetative cover, and slope. Soils here have fair reclamation potential. The main soil limitations include: depth to bedrock, low organic matter content, and high erosion potential especially in areas of steep slopes.

The map unit symbol for the soils identified above and the identified soil map unit symbol are in Table 3.1, below. Ecological site descriptions are soil and vegetation community descriptions compiled by the Natural Resources Conservation Service (NRCS) for the purpose of resource identification, and providing management and reclamation recommendations.

**Table 3.1. Dominant Soils Affected by the Proposed Action**

Map Unit	Map Unit Name
157	Hiland-bowbac fine sandy loams, 0-6 percent slopes

BLM identified project area soils from the South Campbell County Survey Area, Wyoming (WY605). The NRCS performed the soil survey according to National Cooperative Soil Survey standards. BLM obtained pertinent information for analysis from the published soil survey and the National Soils Information System (NASIS) database for the area.

Ecological site descriptions provide site and vegetation information needed for resource identification, management and reclamation recommendations. To determine the appropriate ecological sites for this area, BLM specialists analyzed data from onsite field reconnaissance and NRCS published soil survey soils information. The dominant ecological site in the project area is Loamy (LY).

Species typical of short grass prairie comprise the project area flora. Two dominant plant communities were identified in the project area: Sagebrush grassland and mixed-grass prairie. Specific species in sagebrush grassland observed throughout the project area include Wyoming big sagebrush (*Artemisia*

*ssp.*), silver sagebrush (*Artemisia cana*), western wheatgrass (*Agrophron smithii*), junegrass (*Keoheria macrantha*), needle and thread grass (*Hesperostipa comate*), sandbur bluegrass (*Poa secunda*), prickly pear cactus, and rabbit brush (*Chrysothamnus spp.*). Specific species in mixed-grass prairie observed in the project area include needle and thread grass, western wheatgrass, grama (*Bouteloua spp.*), prickly pear cactus, and Wyoming big sagebrush. Differences in dominant species in the project area vary with soil type, aspect and topography.

### **3.3. Invasive Species**

One State-listed noxious weed and invasive/exotic plant infestation, namely Scotch thistle, was discovered by a search of inventory maps and/or databases or during subsequent field investigation by the proposed project proponent. Some minor areas of cheatgrass or downy brome (*Bromus tectorum*) were discovered along existing disturbances in the project area. Cheatgrass or downy brome (*Bromus tectorum*) and to a lesser extent, Japanese brome (*B. japonicus*) are known to exist in the affected environment. These two species are found in high densities and numerous locations throughout NE Wyoming.

### **3.4. Wildlife**

BLM consulted several resources to identify wildlife species that may occur in the proposed project area, to include: the wildlife database compiled and managed by the BFO wildlife biologists, the PRB FEIS, the Wyoming Game and Fish Department (WGFD) big game and sage-grouse maps, and the Wyoming Natural Diversity Database (WYNDD).

Western Land Services (WLS) performed habitat assessment and wildlife inventory surveys. WLS performed surveys for mountain plover, raptor nests, and prairie dog colonies according to Powder River Basin Interagency Working Group (PRBIWG) accepted protocol in 2011 (WLS 2011). WLS performed a habitat assessment for greater sage-grouse, sharp-tailed grouse, and Ute ladies'-tresses orchid habitat. PRBIWG accepted protocol is available on the BFO internet website at:  
[http://www.blm.gov/wy/st/en/field\\_offices/Bufalo/wildlife.html](http://www.blm.gov/wy/st/en/field_offices/Bufalo/wildlife.html).

A BLM biologist conducted field visits on March 29, 2011. During this time, the biologist reviewed the wildlife survey information for accuracy, evaluated impacts to wildlife resources, and provided project modification recommendations where wildlife issues arose.

WGFD is the agency responsible for management of wildlife populations in the state of Wyoming. WGFD developed several guidance documents that BLM BFO wildlife staff relies upon in evaluating impacts to wildlife and wildlife habitats. WGFD documents used to analyze the proposed project under the current analysis are referenced in this section.

#### **3.4.1. Habitat Types**

Habitats in the project area primarily consist of gently rolling sagebrush grasslands. Grassland areas are dominated by native grasses and perennial forbs. Wyoming big sagebrush is the dominant shrub and occurs in sparse to dense stands throughout the project area. A more in depth description of vegetation in the area can be found in Section 3.2, Soils, Vegetation, & Ecological Sites.

Sparsely scattered mature trees occur along K Bar Draw and the Belle Fourche River. The area is drained by unnamed tributaries the aforementioned drainages. The Belle Fourche has perennial water flow. Several small ponds and reservoirs also occur in the area.

#### **3.4.2. Threatened, Endangered, Proposed, Candidate, and BLM Sensitive Species**

##### **3.4.2.1. Threatened and Endangered Species**

Threatened, endangered, candidate and proposed species occurring in the area will not be impacted beyond the level of the PRB FEIS, and a discussion of the affected environment is in the PRB FEIS, pp.

3-174 to 3-179. Blowout penstemon was not listed when the PRB FEIS was written. A description of habitat and presence for threatened and endangered species is in Table 4.2, below. Black-footed ferret and blowout penstemon habitat is not present in the project area. Potential Ute ladies'-tresses habitat may occur along portions of the Belle Fourche River. Additional information regarding sage-grouse is discussed below.

### **3.4.3. Candidate Species**

#### **3.4.3.1. Greater Sage-grouse**

The PRB FEIS discusses the affected environment for greater sage-grouse (sage-grouse) on pp. 3-194 to 3-199. The U.S. Fish and Wildlife Service (FWS) warranted the sage-grouse for federal listing, but precluded the listing for higher priority listings in 2010. In addition to being a Wyoming BLM sensitive species, sage-grouse are a WGFD species of greatest conservation need, because populations are declining and they are experiencing ongoing habitat loss. The Wyoming Bird Conservation Plan rates them as a Level I species, indicating they are clearly in need of conservation action. They are also a FWS as a bird of conservation concern (BCC) for Region 17.

The State Wildlife Agencies' Ad Hoc Committee for Consideration of Oil and Gas Development Effects to Nesting Habitat (2008) recommends that impacts be considered for leks within 4 miles of oil and gas developments. WGFD records indicate that 1 sage-grouse lek, Porcupine Creek, is about 3.2 miles from the proposed project. The lek was active in 2011 with 10 males and 11 females. WLS did not conduct sage-grouse breeding surveys during the appropriate survey window (WLS 2011). The area is privately owned, reducing the chances that other entities conducted sage-grouse surveys.

Sage-grouse are found in prairie, sagebrush shrublands, other shrublands, wet meadows, and agricultural areas. They depend upon substantial sagebrush stands for nesting and winter survival (BLM 2003). Suitable sage-grouse habitat is present in the project area. Riparian areas along the Belle Fourche and its tributaries contain a diverse mix of vegetation that could support sage-grouse and their broods during summer and early fall. Sage-grouse habitat models indicate that portions of the project area may contain high quality sage-grouse nesting habitat (Walker et al. 2007). Presence of suitable nesting and brood rearing habitat within the project area was verified by the BLM biologist during the onsite visit.

### **3.4.4. Sensitive Species**

Wyoming BLM sensitive species receive focused management efforts towards maintaining habitats under a multiple use mandate. The goals of the policy are to:

- Maintain vulnerable species and habitat components in functional BLM ecosystems
- Ensure sensitive species are considered in land management decisions
- Prevent a need for species listing under the ESA
- Prioritize needed conservation work with an emphasis on habitat

The authority for the sensitive species policy and guidance comes from the Endangered Species Act of 1973, as amended; Title II of the Sikes Act, as amended; the FLPMA; and the Department Manual 235.1.1A, and BLM policy. BLM Wyoming sensitive species are not likely impacted beyond the level analyzed in the PRB FEIS. A discussion of the affected environment for BLM sensitive species is in the PRB FEIS, pp. 3-189 to 3-201. A description of habitat and species presence for BLM sensitive species is present in Table 4.3, below.

### **3.4.5. Big Game**

The PRB FEIS discussed the affected environment for pronghorn and mule deer, pp. 3-117 to 3-122 and pp. 3-127 to 3-132, respectively. The project area contains winter-yearlong range for pronghorn antelope and yearlong range for mule deer. White-tailed deer may also occur in the area. Winter-yearlong use is when a population or a portion of a population of animals makes general use of the documented suitable

habitat sites within this range on a year-round basis. During the winter months there is a significant influx of additional animals into the area from other seasonal ranges. Yearlong use is when a population of animals makes general use of suitable documented habitat sites in the range on a year round basis. Animals may leave the area under severe conditions.

### 3.4.6. Migratory Birds

The PRB FEIS discussed the affected environment for migratory birds on pp. 3-150 to 3-153. Migratory birds are birds that migrate for breeding and foraging at some point in the year. The BLM-FWS MOU (2010) promotes the conservation of migratory birds, as directed through Executive Order 13186 (Federal Register V. 66, No. 11). BLM must include migratory birds in every NEPA analysis of actions that have potential to affect migratory bird species of concern to fulfill obligations under the MBTA. The MBTA (and BGEPA) are strict liability statutes so no intent is required to protect migratory birds through prosecuting a taking. Recent prosecutions or settlements cost Wyoming and area companies millions in fines and restitution (retrofitting powerlines to discourage perching to minimize electrocution or shielding ponds holding toxic substances). BLM encourages voluntary design features and conservation measures that comport with those in the programmatic mitigation in Appendix A of the PRB ROD (2003).

Habitats occurring near the proposed well locations include sage-brush steppe grasslands and mixed grass prairie. Many species that are of high management concern use these areas for their primary breeding habitats (Saab and Rich 1997). Nationally, grassland and shrubland birds declined more consistently than any other ecological association of birds over the last 30 years (WGFD 2009).

The WGFD Wyoming Bird Conservation Plan (Nicholoff 2003) identified 3 groups of high-priority bird species in Wyoming: Level I – are clearly need conservation action, Level II – species where the focus should be on monitoring, rather than active conservation, and Level III – species that are not otherwise of high priority but are of local interest. These species anticipated occurring here are in Table 3.2.

**Table 3.2. Migratory Birds Occurring in Shrub-Steppe Habitat in NE Wyoming (Nicholoff 2003)**

Level	Species	Wyoming BLM Sensitive
Level I	Brewer’s sparrow	Yes
	Ferruginous hawk	Yes
	Greater sage-grouse	Yes
	McCown’s longspur	
	Sage sparrow	Yes
Level II	Lark bunting	
	Lark sparrow	
	Loggerhead shrike	Yes
	Sage thrasher	Yes
	Vesper sparrow	
Level III	Common poorwill	
	Say’s phoebe	

### 3.4.7. Raptors

The PRB FEIS discussed the affected environment for raptors on pp. 3-141 to 3-148. One nest, #762, is approximately 0.66 miles from the proposed well site. The nest is on the ground and was surveyed in 2008 and 2011, with no activity. WLS conducted raptor nest surveys within 0.5 miles of the project area on June 16, 2011 (WLS 2011). They did not locate any previously undocumented nests (WLS 2011).

### 3.4.8. Plains Sharp-tailed Grouse

The PRB FEIS discussed the affected environment for plains sharp-tailed grouse on pp. 3-148 to 3-150.

No known sharp-tailed dancing grounds occur in the project area, however the area is primarily privately owned and unlikely to have had any recent surveys for new breeding activity. WLS did not conduct sharp-tailed grouse breeding surveys during the appropriate survey window (WLS 2011). Nesting and brood-rearing habitat is present in the project area, and the species is suspected to occur.

### **3.5. Cultural Resources**

A previously reviewed and accepted Class III cultural resource inventory (BFO # 65930002) adequately covered the proposed project area. No cultural resources are in the area of potential effect.

### **3.6. Wilderness Characteristics**

The area is clearly lacking wilderness characteristics as it has no federal surface acres.

## **4. ENVIRONMENTAL EFFECTS**

This section analyzes and describes the environmental effects of Alternative B, on the affected environment described in Section 3. This section analyzes changes to the proposed project resulted in development of Alternative B as the preferred alternative. The changes reduced impacts to the environment which will result from this project therefore only the environmental consequences of Alternative B are described below.

### **4.1. Air Quality**

Air quality impacts would occur during construction (due to surface disturbance by earth-moving equipment, vehicle traffic fugitive dust, well testing, as well as drilling rig and vehicle engine exhaust) and production (including non-coalbed natural gas (CBNG) well production equipment, booster and pipeline compression engine exhaust). The amount of air pollutant emissions during construction would be controlled by watering disturbed soils, and by air pollutant emission limitations imposed by applicable air quality regulatory agencies. Air quality impacts modeled in the PRB FEIS concluded that projected oil & gas development would not violate any local, state, tribal or federal air quality standards.

### **4.2. Soils, Vegetation & Ecological Sites**

Proposed stream crossings, including culverts and fords (low water crossings) are shown on the SUP. These structures would be constructed in accordance with sound engineering practices and BLM standards. Table 2.1 summarizes the proposed surface disturbance. The PRB FEIS defined the designation of the duration of disturbance on pp. 4-1 and 4-151. "For this EIS, short-term effects are defined as occurring during the construction and drilling/completion phases. Long-term effects are caused by construction and operations that would remain longer"

#### **4.2.1. Direct and Indirect Effects**

The impacts listed below, singly or in combination, would increase the potential for valuable soil loss due to increased water and wind erosion, invasive plant establishment, and increased sedimentation and salt loads to the watershed system.

The effects to soils resulting from well pad, access roads, and pipeline construction include:

- Mixing of horizons – occurs where construction on roads, pipelines or other activities take place. Mixing may result in removal or relocation of organic matter and nutrients to depths where it would be unavailable for vegetative use. Soils which are more susceptible to wind and water erosion may be moved to the surface. Soil structure may be destroyed, which may impact infiltration rates. Less desirable inorganic compounds such as carbonates, salts or weathered materials may be relocated and have a negative impact on revegetation. This drastically disturbed site may change the ecological integrity of the site and the recommended seed mix.
- Loss of soil vegetation cover, biologic crusts, organic matter and productivity.

- Soil erosion would also affect soil health and productivity. Erosion rates are site specific and are dependent on soil, climate, topography and cover.
- Soil compaction – the collapse of soil pores results in decreased infiltration and increased erosion potential. Factors affecting compaction include soil texture, moisture, organic matter, clay content and type, pressure exerted, and the number of passes by vehicle traffic or machinery.
- Alteration of surface run-off characteristics.
- An important component of soils in Wyoming’s semiarid rangelands, especially in the Wyoming big sagebrush cover type, are biological soil crusts, or cryptogamic soils that occupy ground area not covered with vascular plants. Biological soil crusts are important in maintaining soil stability, controlling erosion, fixing nitrogen, providing nutrients to vascular plants, increasing precipitation infiltration rates, and providing suitable seed beds (BLM 2003). They are adapted to growing in severe climates; however, they take many years to develop (20 to 100) and can be easily disturbed or destroyed by surface disturbances associated with construction activities.

Direct effects to vegetation would occur from ground disturbance caused by construction of well pads, compressor stations, ancillary facilities, associated pipelines, and roads. Short term effects would occur where vegetated areas are disturbed but later reclaimed in 1 to 3 years of the initial disturbance. Long-term effects would occur where well pads, compressor stations, roads, water-handling facilities, or other semi-permanent facilities would result in loss of vegetation and prevent reclamation for the project’s life.

Sagebrush does not come back easily after human disturbance such as urban or agricultural development, or even after natural occurrences such as wildfire. It takes years, maybe generations, for sagebrush to fully grow back. Sagebrush still has not returned to areas of the Columbia Basin burned by a large fire 40 years ago (Pacific Northwest National Laboratory Shrub Steppe Ecology Series May 2010).

#### **4.2.2. Cumulative Effects**

The PRB FEIS defined the designation of the duration of disturbance on pp. 4-1 and 4-151. Most soil disturbances would be short term impacts with expedient interim reclamation and site stabilization, as committed to by the operator in their SUP and as required by the BLM in COAs.

Geomorphic effects of roads and other surface disturbance range from chronic and long-term contributions of sediment into waters of the state to catastrophic effects associated with mass failures of road fill material during large storms. Roads can affect geomorphic processes primarily by: accelerating erosion from the road surface and prism itself through mass failures and surface erosion processes; directly affecting stream channel structure and geometry; altering surface flow paths, leading to diversion or extension of channels onto previously unchannelized portions of the landscape; and causing interactions among water, sediment, and debris at road-stream crossings.

These impacts, singly or in combination, could increase the potential for valuable soil and vegetation loss due to increased water and wind erosion, invasive/noxious/poisonous plant spread, invasion and establishment, and increased sedimentation and salt loads to the watershed system.

#### **4.2.3. Mitigation Measures**

Impacts to soils and vegetation from surface disturbance will be reduced by following the BLM recommended mitigation.

- The operator should follow the guidance provided in the Wyoming Policy on Reclamation (IM WY-2009-022). The Wyoming Reclamation Policy applies to all surface disturbing activities. Authorizations for surface disturbing actions are based upon the assumptions that an area can and ultimately will be successfully reclaimed. BLM reclamation goals emphasize eventual ecosystem reconstruction, which means returning the land to a condition approximate to an approved “Reference

Site” or NRCS Ecological Site Transition State. Final reclamation measures are used to achieve this goal. BLM reclamation goals also include the short-term goal of quickly stabilizing disturbed areas to protect both disturbed and adjacent undisturbed areas from unnecessary degradation. Interim reclamation measures are used to achieve this short-term goal.

**4.2.4. Residual Effects**

Residual effects were also identified in the PRB FEIS at p. 4-408 such as the loss of vegetative cover, despite expedient reclamation, for several years until reclamation is successfully established.

**4.3. Invasive Species**

The operator committed to the control of noxious weeds and species of concern using the following measures: 1) Control Methods, including frequency; 2) Preventive practices; and 3) Education.

Cheatgrass or downy brome (*Bromus tectorum*) and to a lesser extent, Japanese brome (*B. japonicus*) exist in the affected environment. These species are found in such high densities and numerous locations throughout northeast Wyoming that a control program is not considered feasible at this time.

The use of existing facilities along with the surface disturbance associated with construction of proposed access roads, pipelines, and related facilities would present opportunities for weed invasion and spread. The activities related to the performance of the proposed project would create a favorable environment for the establishment and spread of noxious weeds/invasive plants such as salt cedar, Canada thistle, and perennial pepperweed. However, BLM’s recommended COAs will reduce potential impacts from noxious weeds and invasive plants.

**4.4. Wildlife**

**4.4.1. Threatened, Endangered, Proposed and Candidate Species Threatened and Endangered Species**

Table 4.1, below, summarizes the effects to threatened, endangered, and candidate species. The PRB FEIS also addressed them, pp. 4-250 to 4-257. Additional information on sage-grouse is discussed below.

**Table 4.1. Summary of Threatened and Endangered Species Habitat and Project Effects**

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
<i>Endangered - none</i>				
<i>Threatened</i>				
Ute ladies’-tresses orchid	Riparian areas with permanent water	NP	NE	Project activities are not proposed within potential habitat.
<i>Candidate</i>				
Greater Sage-grouse	Basin-prairie shrub, mountain-foothill shrub	K	MIIH	Suitable nesting and brood rearing habitat is present.
Presence K – Known, documented observation within project area. NP – Habitat not present and species unlikely to occur in the project area.			Project Effects NE – No Effect MIIH – May impact individuals and habitat	

**4.4.1.1. Candidate Species**

**4.4.1.1.1. Greater Sage-grouse**

**4.4.1.1.1.1. Direct and Indirect Effects**

Impacts to sage-grouse associated with energy development are discussed in detail in the 12-Month

Findings for Petitions to List the Greater Sage-Grouse (*Centrocercus urophasianus*) as Threatened or Endangered (USFWS 2010). Impacts to sage-grouse are generally a result of loss and fragmentation of sagebrush habitats associated with roads and infrastructure. Research indicates that sage-grouse hens also avoid nesting in developed areas.

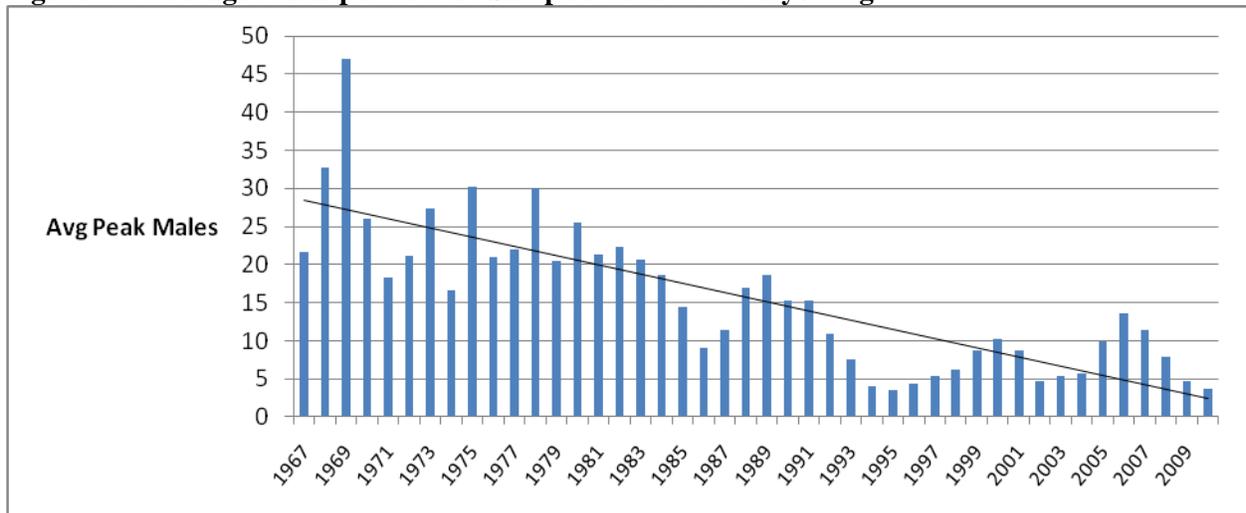
According to habitat models (Walker et al. 2007), the Drake 31-29HT well is within 2 miles of high quality nesting habitat. Surface disturbance is proposed to occur on an existing conventional oil well pad, with 0.98 acres of direct loss of sage-brush occurring from pad enlargement. Sage-grouse may be using suitable habitat in the project area and implementation of the proposed project will impact sage-grouse habitat and individuals.

**4.4.1.1.2. Cumulative Effects**

The sage-grouse population in northeast Wyoming is exhibiting a steady long term downward trend, as measured by lek attendance (WGFD 2010). Figure 4.2 illustrates a 10-year cycle of periodic highs and lows. Each subsequent population peak is lower than the previous peak. Research suggests that these declines may be a result, in part, of CBNG development, as discussed in detail in FWS (2010).

The PRB FEIS (BLM 2003) states that “the synergistic effect of several impacts would likely result in a downward trend for the sage-grouse population, and may contribute to the array of cumulative effects that may lead to its federal listing. Local populations may be extirpated in areas of concentrated development, but viability across the Project Area (Powder River Basin) or the entire range of the species is not likely to be compromised (pg. 4-270).” Based on the impacts described in the PRB FEIS and the findings of more recent research, the proposed action may contribute to extirpation of the local grouse population.

**Figure 4.2. Average Males per Lek for Sampled Leks in NE Wyoming**



**4.4.1.1.3. Mitigation Measures**

In order to reduce the impacts to sage-grouse associated with noise, construction, and human disturbance resulting from implementation of the proposed project, BLM recommends a timing limitation on all surface-disturbing activities within and adjacent to identified nesting habitat across the project area. Because nesting grouse have been shown to avoid infrastructure by up to 0.6 miles, the intent of this timing restriction is to decrease the likelihood that grouse will avoid these areas and increase habitat quality by reducing noise and human activities during the breeding season. According to WY SDR 2011-010, the BLM is unable to require the timing limitation because surface disturbing activities are occurring on an existing fee/fee well site, but it will be included as a recommended COA.

#### **4.4.1.1.1.4. Residual Effects**

If Ballard chooses to commence with surface disturbing activities during the recommended timing limitations, sage-grouse will remain vulnerable during the breeding season. A timing limitation does nothing to mitigate loss and fragmentation of habitat or changes in disease mechanisms. Suitability of the project area for sage-grouse will be negatively affected due to habitat loss and fragmentation and proximity of human activities associated with oil and gas development.

#### **4.4.1.2. Sensitive Species**

BLM will take necessary actions to meet the policies set forth in sensitive species policy (BLM Manual 6840). BLM Manual 6840.22A states that “The BLM should obtain and use the best available information deemed necessary to evaluate the status of special status species in areas affected by land use plans or other proposed actions and to develop sound conservation practices. Implementation-level planning should consider all site-specific methods and procedures which are needed to bring the species and their habitats to the condition under which the provisions of the ESA are not necessary, current listings under special status species categories are no longer necessary, and future listings under special status species categories would not be necessary.”

The effects to sensitive species resulting from implementation of the project are identified in Table 4.2, below, and discussed in the PRB FEIS discusses impacts to sensitive species on pp. 4-257 to 4-265.

**Table 4.2. Summary of Sensitive Species Habitat and Project Effects.**

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
<i>Amphibians</i>				
Northern leopard frog ( <i>Rana pipiens</i> )	Beaver ponds and cattail marshes from plains to montane zones.	S	MIIH	Existing reservoirs and ponds may be being used by frogs. Noise produced by surface disturbing and maintenance activities may impact ability to hear vocalizations within population.
Columbia spotted frog ( <i>Ranus pretiosa</i> )	Ponds, sloughs, small streams, and cattails in foothills and montane zones. Confined to headwaters of the S Tongue R drainage and tributaries.	NP	NI	The project area is outside the species' range, and the species is not expected to occur.
<i>Fish</i>				
Yellowstone cutthroat trout ( <i>Oncoryhynchus clarki bouvieri</i> )	Cold-water rivers, creeks, beaver ponds, and large lakes in the Upper Tongue sub-watershed	NP	NI	The project area is outside the species' range, and the species is not expected to occur.
<i>Birds</i>				
Baird's sparrow ( <i>Ammodramus bairdii</i> )	Shortgrass prairie and basin-prairie shrubland habitats; plowed and stubble fields; grazed pastures; dry lakebeds; and other sparse, bare, dry ground.	S	MIIH	Nesting and foraging habitat may be impacted by dust, noise, human activities, and direct loss. Species may avoid area.
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	Mature forest cover often within one mile of large water body with reliable prey source nearby.	S	MIIH	Bald eagles are not likely to use mature trees in the project area for nesting or winter roosting. Surface disturbing and maintenance activities may impact foraging eagles and the species may avoid the area.
Brewer's sparrow ( <i>Spizella breweri</i> )	Sagebrush shrubland	S	MIIH	Nesting and foraging habitat may be impacted by dust, noise, human activities, and direct loss. Species may avoid area.

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
Ferruginous hawk ( <i>Buteo regalis</i> )	Basin-prairie shrub, grasslands, rock outcrops	S	MIIH	Nest 762 is a ground nest that was likely to be used by ferruginous hawks. The nest is reported as remnants. Hawks are unlikely to return to the nest due to the 5 producing gas wells and 1 producing oil well located within 0.5 miles. Nesting and foraging habitat may be impacted by dust, noise, human activities, and direct loss. Species may avoid area.
Loggerhead shrike ( <i>Lanius ludovicianus</i> )	Basin-prairie shrub, mountain-foothill shrub	S	MIIH	Nesting and foraging habitat may be impacted by dust, noise, human activities, and direct loss. Species may avoid area.
Long-billed curlew ( <i>Numenius americanus</i> )	Grasslands, plains, foothills, wet meadows	S	MIIH	Nesting and foraging habitat may be impacted by dust, noise, human activities, and direct loss. Species may avoid area.
Mountain Plover	Short-grass prairie with slopes < 5%	NP	NI	Habitat not present
Northern goshawk ( <i>Accipiter gentilis</i> )	Conifer and deciduous forests	NP	NI	Habitat not present.

Peregrine falcon ( <i>Falco peregrinus</i> )	Cliffs	NP	NI	Habitat not present.
Sage sparrow ( <i>Amphispiza billneata</i> )	Basin-prairie shrub, mountain-foothill shrub	S	MIH	Nesting and foraging habitat may be impacted by dust, noise, human activities, and direct loss. Species may avoid area.
Sage thrasher ( <i>Oreoscoptes montanus</i> )	Basin-prairie shrub, mountain-foothill shrub	S	MIH	Nesting and foraging habitat may be impacted by dust, noise, human activities, and direct loss. Species may avoid area.
Trumpeter swan ( <i>Cygnus buccinator</i> )	Lakes, ponds, rivers	S	MIH	The Belle Fourche River, existing reservoirs, and ponds in the area may attract swans during migration periods. The species may be disturbed by dust, noise, and human activities associated with project implementation.
Western Burrowing owl ( <i>Athene cunicularia</i> )	Grasslands, basin-prairie shrub	NP	NI	Habitat not present.
White-faced ibis ( <i>Plegadis chihi</i> )	Marshes, wet meadows	NP	NI	Habitat not present.
Yellow-billed cuckoo ( <i>Coccyzus americanus</i> )	Open woodlands, streamside willow and alder groves	NP	NI	Habitat not present.
<i>Mammals</i>				
Black-tailed prairie dog ( <i>Cynomys ludovicianus</i> )	Prairie habitats with deep, firm soils and slopes less than 10 degrees.	NP	NI	No known colonies present.
Fringed myotis ( <i>Myotis thysanodes</i> )	Conifer forests, woodland chaparral, caves and mines	NP	NI	Habitat not present.
Long-eared myotis ( <i>Myotis evotis</i> )	Conifer and deciduous forest, caves and mines	NP	NI	Habitat not present.
Swift fox ( <i>Vulpes velox</i> )	Grasslands	NS	NI	Although suitable habitat is present, a lack of abundant prey source reduces the likelihood that foxes will occur.
Townsend's big-eared bat ( <i>Corynorhinus townsendii</i> )	Caves and mines.	NP	NI	Habitat not present.
<i>Plants</i>				
Limber Pine ( <i>Pinus flexilis</i> )	Mountains, associated with high elevation conifer species	NP	NI	Habitat not present.

Porter's sagebrush ( <i>Artemisia porteri</i> )	Sparsely vegetated badlands of ashy or tufaceous mudstone and clay slopes 5300-6500 ft.	NP	NI	Habitat not present.
William's wafer parsnip ( <i>Cymopterus williamsii</i> )	Open ridgetops and upper slopes with exposed limestone outcrops or rockslides, 6000-8300 ft.	NP	NI	Project area outside of species' range.
Presence K - Known, documented observation within project area. S - Habitat suitable and species suspected, to occur within the project area. NS - Habitat suitable but species is not suspected to occur within the project area. NP - Habitat not present and species unlikely to occur within the project area.		Project Effects NI - No Impact. MIIH - May Impact Individuals or Habitat, but will not likely contribute to a trend towards Federal listing or a loss of viability to the population or species. WIPV - Will Impact Individuals or Habitat with a consequence that the action may contribute to a trend towards Federal listing or cause a loss of viability to the population or species. BI - Beneficial Impact		

#### **4.4.1.3. Big Game Direct and Indirect Effects**

The PRB FEIS discussed impacts to big game animals from CBNG and oil development on pp.4-181 to 4-215. Big game would likely be displaced from the project area during drilling and construction. A study in central Wyoming reported that mineral drilling activities displaced mule deer by more than 0.5 miles (Hiatt and Baker 1981). The WGFD indicates a well density of 8 wells per section creates a high level of impact for big game and that avoidance zones around mineral facilities overlap creating contiguous avoidance areas (WGFD 2004). A multi-year study on the Pinedale Anticline suggests not only do mule deer avoid mineral activities, but after 3 years of drilling activity the deer have not become accustomed to the disturbance (Madson 2005).

Big game animals are expected to return to the project area following construction; however, populations will likely be lower than prior to project implementation as the human activities associated with operation and maintenance continue to displace big game. Mule deer are more sensitive to operation and maintenance activities than pronghorn, and, as the Pinedale Anticline study suggests, mule deer do not readily habituate. A study in North Dakota stated, “Although the population (mule deer) had over seven years to habituate to oil and gas activities, avoidance of roads and facilities was determined to be long term and chronic” (Lustig 2003). Deer have even been documented to avoid dirt roads that were used only by 4-wheel drive vehicles, trail bikes, and hikers (Jalkotzy et al. 1997).

Reclamation activities that occur in big game habitats during the spring will likely displace does and fawns due to the human presence in the area. This may cause reduced survival rate of does and fawns that must expend increased energies to avoid such activities.

##### **4.4.1.3.1. Cumulative Effects**

The cumulative effects associated with Alternative B are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, refer to the PRB FEIS, pp. 4-181 to 4-215.

##### **4.4.1.3.2. Mitigation Measures**

No mitigation is proposed with Alternative B.

##### **4.4.1.3.3. Residual Impacts**

No residual impacts area anticipated.

#### **4.4.1.4. Migratory Birds Direct and Indirect Effects**

The PRB FEIS discussed direct and indirect effects to migratory birds, pp. 4-231 to 4-235. Disturbance of habitat in the project area is likely to impact migratory birds. Native habitats will be lost directly with the enlargement of the existing pad. Reclamation and other activities that occur in the spring may be detrimental to migratory bird survival. Prompt re-vegetation of short-term disturbance areas should reduce habitat loss impacts. Activities will likely displace migratory birds farther than the immediate area of physical disturbance. Drilling and construction noise can be troublesome for songbirds by interfering with the males’ ability to attract mates and defend territory, and the ability to recognize calls from conspecifics (BLM 2003).

Habitat fragmentation will result in more than just a quantitative loss in the total area of habitat available; the remaining habitat area will also be qualitatively altered (Temple and Wilcox 1986). Ingelfinger (2004) identified that the density of breeding Brewer’s sparrows declined by 36% and breeding sage sparrows declined by 57% within 100 m of dirt roads in a natural gas field. Effects occurred along roads with light traffic volume (less than 12 vehicles per day). The increasing density of roads constructed in developing natural gas fields exacerbated the problem creating substantial areas of impact where indirect habitat losses through displacement were much greater than the direct physical habitat losses.

Those species that are edge-sensitive will be displaced further away from vegetative edges due to increased human activity, causing otherwise suitable habitat to be abandoned. If the interior habitat is at carrying capacity, then birds displaced from the edges will have no place to relocate. One consequence of habitat fragmentation is a geometric increase in the proportion of the remaining habitat that is near edges (Temple 1986). In severely fragmented habitats, all of the remaining habitat may be so close to edges that no interior habitat remains (Temple and Cary 1988). Over time, this leads to a loss of interior habitat species in favor of edge habitat species. Other migratory bird species that utilize the disturbed areas for nesting may be disrupted by the human activity, and nests may be destroyed by equipment.

Migratory bird species in the PRB nest in the spring and early summer and are vulnerable to the same effects as sage-grouse and raptor species. Though no timing restrictions are typically applied specifically to protect migratory bird breeding or nesting, where sage-grouse or raptor nesting timing limitations are applied, nesting migratory birds are also protected. Where these timing limitations are not applied and migratory bird species are nesting, migratory birds remain vulnerable.

#### **4.4.1.4.1. Cumulative Effects**

The cumulative effects associated with Alternative B are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, refer to the PRB FEIS, p. 4-235. No additional mitigation measures are required.

#### **4.4.1.4.2 Mitigation Measures**

No timing limitations on surface disturbing activities are proposed specifically for migratory birds. However, if Ballard chooses to follow the recommended sage-grouse timing limitations on surface disturbing activities, these limitations will also serve to mitigate impacts to nesting migratory birds from March 15 - June 30.

#### **4.4.1.4.3 Residual Effects**

Those migratory bird species and individuals that are still nesting when the sage-grouse timing limitations are over (June 30) may have nests destroyed, or be disturbed, by construction activities.

#### **4.4.1.5. Raptors**

##### **4.4.1.5.1. Direct and Indirect Effects**

The PRB FEIS analyzed direct and indirect impacts to raptors from oil and gas development, (pp. 4-216 to 4-221). Human activities in close proximity to active raptor nests may interfere with nest productivity. Romin and Muck (1999) indicate that activities within 0.5 miles of a nest are prone to cause adverse impacts to nesting raptors. If mineral activities occur during nesting, noise and human activity could cause adult birds to remain away from the nest and their chicks. This absence can lead to overheating or chilling of eggs or chicks and can result in egg or chick mortality. Prolonged disturbance can also lead to the abandonment of the nest by the adults. Routine human activities near these nests can also draw increased predator activity to the area, resulting in increased nest predation. Overhead power can kill raptors through strikes and electrocution.

Nest #762 is likely to have been built by ferruginous hawks and occurs approximately 0.66 miles from the proposed well location. The FWS recommends that a 1 mile spatial buffer be required for ferruginous hawk nests. The BLM biologist verified that the proposed well location is out of the line of sight of the nest at the onsite. The nest was reported in remnant condition in 2011 (BLM-BFO databases). It is unlikely that ferruginous hawks will attempt to rebuild the nest given its proximity to existing oil and gas development. If ferruginous hawks do rebuild and occupy the nest in the future, there may not be an adequate biologic buffer to mitigate impacts from noise and human activity..

#### **4.4.1.5.2. Cumulative Effects**

The cumulative effects associated with Alternative B are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, refer to the PRB FEIS, p. 4-221.

#### **4.4.1.5.3. Mitigation Measures**

No mitigation measures are recommended with Alternative B.

#### **4.4.1.5.4. Residual Impacts**

No residual impacts are anticipated.

### **4.4.1.6. Plains Sharp-tailed Grouse**

#### **4.4.1.6.1. Direct and Indirect Effects**

Direct and indirect impacts to sharp-tailed grouse, from oil and gas development, are analyzed in the PRB FEIS (pp. 4-221 to 4-225).

#### **4.4.1.6.2. Cumulative Effects**

The cumulative effects associated with Alternatives B are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, refer to the PRB FEIS, pp. 4-225 to 4-226.

#### **4.4.1.6.3. Mitigation Measures**

No mitigation is recommended with Alternative B specifically for sharp-tailed grouse.

#### **4.4.1.6.4. Residual Impacts**

No residual impacts are anticipated.

## **4.5. Cultural Resources**

### **4.5.1. Direct and Indirect Effects**

The proposed project will not impact historic properties. Following the Wyoming State Protocol Section VI(A)(1) the BLM electronically notified the Wyoming State Historic Preservation Officer (SHPO) on October 7, 2011 that no historic properties exist in the area of project effects. If any cultural values [sites, artifacts, human remains (Appendix L PRB FEIS and ROD)] are observed during operation of this lease/permit/right-of-way, they will be left intact and the Buffalo Field Manager notified. Further discovery procedures are explained in the Standard COA (General)(A)(1).

Construction and development of oil and gas resources impacts cultural resources through ground disturbance, unauthorized collection, and visual intrusion of the setting of historic properties. This results in fewer archaeological resources available for study of past human life-ways, changes in human behavior through time, and interpreting the past to the public. Additionally, these impacts may compromise the aspects of integrity that make a historic property eligible for the National Register of Historic Places. Recording and archiving basic information about archaeological sites and the potential for subsurface cultural materials in the proposed project area serve to partially mitigate potential cumulative effects to cultural resources.

Fee actions constructed in support of federal actions can result in impacts to historic properties. Construction of oil development on split estate often include associated infrastructure that is not permitted through BLM. Project applicants may connect wells draining fee minerals, or previously constructed pipelines on fee surface with a federal plan of development. BLM has no authority over such development which can impact historic properties. BLM has the authority to modify or deny approval of federal undertakings on private surface, but that authority is limited to the extent of the federal approval. Historic properties on private surface belong to the surface owner and they are not obligated to preserve

or protect them. The BLM may go to great lengths to protect a site on private surface from a federal undertaking, but the same site can be legally impacted by the landowner at any time. The cumulative effect of numerous federal approvals can result in impacts to historic properties.

Archeological inventories reveal the location of sites and although the BLM goes to great lengths to protect site location data, information can potentially get into the wrong hands. BLM authorizations that result in new access can inadvertently lead to impacts to sites from increased visitation by the public.

**4.5.2. Mitigation Measures**

If any cultural values [sites, artifacts, human remains (Appendix L PRB FEIS and ROD)] are observed during operation of this lease/permit/right-of-way, they will be left intact and the Buffalo Field Manager notified. Further discovery procedures are explained in the Standard COA (General)(A)(1).

**4.5.3. Residual Effects**

During the construction phase, there will be numerous crews working across the project area using heavy construction equipment without the presence of archaeological monitors. Due to the extent of work and the surface disturbance caused by large vehicles, it is possible that unidentified cultural resources can be damaged by construction activities. The increased human presence associated with the construction phase can also lead to unauthorized collection of artifacts or vandalism of historic properties.

**4.6. Description of Proposed Mitigation Measures:**

The operator will incorporate site specific changes made at the onsite into the project as well as implementation of committed mitigation measures contained in the SUP and Drilling Plans, in addition to attached COAs.

**5. CONSULTATION/COORDINATION:**

Contact	Title	Organization	Present at onsite
Michael Perius	Operations Superintendent	Ballard Petroleum	Y
Edra Drake	Surface Owner		Y
Brad Rogers	Wildlife Biologist	USFWS	Y
Mary Hopkins	Wyoming State Historic Preservation Officer	State Historic Preservation Office	N

**6. REFERENCES AND AUTHORITIES:**

The National Environmental Policy Act of 1969 (NEPA), as amended (Pub. L. 91-90, 42 U.S.C. 4321 et seq.).

Code of Federal Regulations (CFR)

- 40 CFR All Parts and Sections inclusive Protection of Environment Revised as of July 1, 2001.
- 43 CFR All Parts and Sections inclusive - Public Lands: Interior. Revised as of October 1, 2000.

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