

**DECISION RECORD**  
**Environmental Analysis (EA), WY-070-EA15-3**  
**WESCO Operating Smith 1: Dart 4R (re-entry)/Smith Federal 21-1 and Smith Federal 31-1,**  
**Plan of Development (POD)**  
**Bureau of Land Management, Buffalo Field Office, Wyoming**

**DECISION:** The BLM approves the applications for permit to drill (APDs) from WESCO, to drill 2 vertical oil and gas wells. The company proposes to drill the wells and construct associated infrastructure, at the locations noted below.

**Compliance.** This decision complies with:

- Federal Land Policy and Management Act of 1976 (FLPMA) (43 USC 1701); DOI Order 3310.
- National Environmental Policy Act of 1969 (NEPA) (42 USC 4321).
- National Historic Preservation Act of 1966 (16 USC 470).
- Endangered Species Act of 1974 (16 USC 1531).
- Powder River Basin (PRB) Oil and Gas Project Final Environmental Impact Statement (FEIS), 2003.
- Buffalo Resource Management Plan (RMP) 1985, Amendments 2001, 2003, 2011.

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

BLM approves the following APDs and support facilities:

#	Well Name & #	Qtr	Sec	Twp	Rng	Lease #s WYW-
1	Dart 4R/Smith Federal 21-1	NENW	1	54N	71W	043623
2	Smith Federal 31-1	NWNE	1	54N	71W	043623

**Limitations.** See the conditions of approval (COAs).

**THE FINDING OF NO SIGNIFICANT IMPACT (FONSI).** Analysis of Alternative B of EA, WY-070-EA15-3, incorporated here by reference, found operators proposal for 2 APDs will have no significant effects on the human environment beyond those described in the PRB FEIS. There is no requirement for an EIS.

**COMMENT OR NEW INFORMATION SUMMARY.** There is no new information received post analysis that affects this project.

**DECISION RATIONALE.** The approval of this project is because:

1. Mitigation measures and COAs analyzed in the EA, in environmental impact statements or NEPA documents to which the EA tiers or incorporates by reference, will reduce environmental impacts while meeting the BLM's need.
2. The approved project conditioned by its design features and COAs, will not result in any undue or unnecessary environmental degradation.
  - A. The impact of this development cumulatively contributes to the potential for local Greater Sage Grouse (GSG) extirpation, yet its effect is acceptable because it is outside priority habitats and is within the parameters of the PRB FEIS/ROD and current BLM and Wyoming GSG conservation strategies.
  - B. BLM adopts the analysis and condition of approval for burrowing owl conservation from the similarly situated sagebrush and short grass prairie found in the Thunder Basin National Grassland Land and RMP, 2002, 2006, pp. 1-13 to 1-22; the supporting FEIS, 2002, and its

Records of Decision, 2002, p. D-15, 2006. This is the least restrictive COA for burrowing owl conservation benefitting the owl and this project.

- C. There are no conflicts anticipated or demonstrated with current uses in the area.
3. Approval of this project conforms to the terms and the conditions of the 1985 Buffalo RMP (BLM 1985) and subsequent update (BLM 2001) and amendments (BLM 2003, 2011).
  4. The selected alternative will help meet the nation's energy need, revenues, and stimulate local economies by maintaining workforces.
  5. The operator, in their APDs, shall:
    - Comply with all applicable federal, state, and local laws and regulations.
    - Offer water well agreements to the owners of record for permitted water wells within 0.5 mile of a federal producing well in the APDs (PRB FEIS ROD, p. 7).
  6. The project is clearly lacking in wilderness characteristics as it is amidst existing mineral development.
  7. The operator certified there is a surface use access agreement with the landowners.
  8. This approval is subject to adherence with all of the operating plans, design features, and mitigation measures contained in the master surface use plan of operations, drilling plan, water management plan, and information in the APDs.

**ADMINISTRATIVE APPEAL:** This decision is subject to administrative appeal in accord with 43 CFR 3165. Request for administrative appeal 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: \_\_\_\_\_/s/ Duane W. Spencer\_\_\_\_\_

Date: \_\_\_\_\_12/19/14\_\_\_\_\_

**FINDING OF NO SIGNIFICANT IMPACT**  
**WESCO Operating Smith 1: Dart 4R (re-entry)/Smith Federal 21-1 and Smith Federal 31-1**  
**Environmental Assessment (EA), WY-070-EA15-3**  
**Bureau of Land Management, Buffalo Field Office, Wyoming**

**FINDING OF NO SIGNIFICANT IMPACT (FONSI).** Based on the information in the EA, WY-070-EA15-3, which BLM incorporates here by reference; I find that: (1) the implementation of Alternative B will not have significant environmental impacts beyond those addressed in the Buffalo Resource Management Plan Final Environmental Impact Statement (FEIS) 1985, and the Powder River Basin (PRB) Oil and Gas Project FEIS, 2003; (2) Alternative B conforms to the Buffalo Field Office (BFO) Resource Management Plan (RMP) (1985, 2001, 2003, 2011); 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 consideration of the Council on Environmental Quality's (CEQ) criteria for significance (40 CFR 1508.27), with regard to the context and to the intensity of the impacts described in the EA, and Interior Department Order 3310.

**CONTEXT.** Mineral development is a common PRB land use, sourcing over 42% of the nation's coal. The PRB FEIS foreseeable development analyzed the development of 54,200 wells. The additional development analyzed 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 reduce adverse environmental effects. The preferred alternative does not pose a significant risk to public health and safety. The geographic area of the project does not contain unique characteristics as identified in the 1985 RMP, the 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 have minor controversy, are not highly uncertain, or do not involve unique or proven 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. The proposal may relate to the PRB Greater Sage-Grouse and its habitat decline having cumulative significant impacts; yet this project is within the parameters of the impacts in the PRB FEIS. 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 since it is amidst mineral development. 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. Parties 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:                     /s/ Duane W. Spencer                    

Date:                     12/19/14

**Environmental Assessment (EA), WY-070-EA15-3**  
**WESCO Operating Smith 1: Dart 4R (re-entry)/Smith Federal 21-1 and Smith Federal 31-1**  
**Applications for Permit to Drill (APDs)**  
**Plan of Development (POD)**  
**Bureau of Land Management, Buffalo Field Office, Wyoming**

**1. INTRODUCTION**

WESCO, the operator, requests BLM’s approval for 2 applications for permit to drill (APDs), 2 vertical oil wells on 2 different pads. BLM incorporates the APDs here by reference; see the administrative record (AR). The AR is available for review at the BLM Buffalo Field Office (BFO).

The operator proposes to drill 2 vertical oil and gas wells and construct associated infrastructure at the locations in Table 1. The proposed wells are less than ¾ miles apart. The operator proposes draining from the Minnelusa Formation. The wells will be drilled from non-federal surface sites into underlying federal minerals on the lease listed below – resulting in standard split federal jurisdiction. Lynn and Donna Smith are the surface owners. The proposals clearly lack wilderness characteristics as it is amidst existing mineral development.

**Table 1. APDs with Surface and Bottomhole Leases:**

#	Well Name & #	Qtr	Sec	Twp	Rng	Lease #s WYW-
1	Dart 4R/Smith Federal 21-1	NENW	1	54N	71W	043623
2	Smith Federal 31-1	NWNE	1	54N	71W	043623

**1.1. Background**

The operator submitted NOSs for these wells on Nov. 19, 2013. The operator and BLM completed onsite inspections on July 29, 2014. BLM received the APDs on Sept. 17, 2014. The parties evaluated the proposals, modifying them to reduce environmental impacts. The BLM sent a post onsite deficiency letter to the operator on July 18, 2014. This EA incorporates by reference earlier NEPA analyses of PODs and wells that are similar to this project, such as the Powder River Basin Environmental Impact Statement (PRB FEIS) and the following EAs:

**Table 1.1**

Operator/Agency	POD/Project Name/#	NEPA ID #	Approved Date Year
Stephens Energy	Federal 7-25	WY-070-EA12-059	2012
Trend Exploration	11 APD Package	WY-070-11-38	2010
Anadarko Petroleum, Corp.	Crazy Cat East	WY-070-EA13-028	2014

One may review these documents at the BFO and on our website:

[http://www.blm.gov/wy/st/en/field\\_offices/Buffalo.html](http://www.blm.gov/wy/st/en/field_offices/Buffalo.html).

**1.2. Need for the Proposal**

The BLM’s need for this project is to meet the management objectives of the Buffalo Resource Management Plan (RMP) (1985) and amendments (2001, 2003, and 2011) (to which this EA tiers). BLM must determine how and under what conditions to balance natural resource conservation with allowing the company to exercise lease rights to develop fluid minerals, as described in their APDs associated plans. Conditional fluid mineral development supports the RMP, the Mineral Leasing Act of 1920, the Federal Land Policy Management Act (FLPMA), other laws, and regulations.

### **1.3. Decision to be Made**

The BLM will decide whether or not to approve the proposed development, and if so, under what terms and conditions agreeing with the Bureau's multiple use mandate, environmental protection, and RMP.

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

BLM posted the proposed APDs for 30 days and will timely publish the EA, any finding, and decision on the BFO website. This project is similar in scope to other fluid mineral development the BFO analyzed. External scoping is unlikely to identify new issues, as verified with recent fluid mineral EAs that BLM externally scoped. External scoping of the horizontal drilling in Crazy Cat East EA, WY-070-EA13-028, 2013, in the Powder River Basin (PRB) area received 3 comments, revealing no new issues. The BFO interdisciplinary team conducted internal scoping by reviewing the proposal, its location, and a resource (issue) list (see, AR), to identify potentially significantly affected resources, land uses, resource issues, regulations, and site-specific circumstances not addressed in the analyses incorporated by reference. This EA will not discuss resources and land uses that are not present, unlikely to receive material affects, or that the PRB Final Environmental Impact Statement (FEIS) (which this EA tiers), or other analyses addressed. The area's extensive development was material to this scoping; see Section 3, below.

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

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

The no action alternative would deny these APDs requiring the operator to resubmit APDs that comply with statutes and the reasonable measures in the PRB RMP Record of Decision (ROD) in order to lawfully exercise conditional lease rights. The PRB FEIS considered a no action alternative, pp. 2-54 to 2-62. The BLM keeps the no action alternative current using the aggregated effects analysis approach – incorporating by reference the analyses and developments approved by the subsequent NEPA analyses for similar developments to this proposal.

### **2.2. Alternative B Proposed Action (Proposal)**

**Overview.** The operator requests BLM's approval for 2 oil well APDs on 2 pads, and supporting infrastructure. The Dart 4R is a re-drill, if the operator has "downhole problems with the re-drill, they will move the rig over approximately 25' and drill a new well. This will be done on the same pad with no new surface disturbance. The wells will be drilled from non-federal surface into underlying federal minerals.

The proposal is to explore for, and possibly develop oil and gas reserves in the Minnelusa Formation at depths around 7,600 feet. The project area is North of Gillette, Campbell County, Wyoming. Project elevations average 3700 feet. The topography has gently sloped draws rising to mixed sagebrush and grassland uplands. Ephemeral tributaries drain the area. The area climate is semi-arid, averaging 13 inches annual precipitation, about 60% of which occurs between April and September.

Drilling, Construction and Production design features include:

#### **Access**

- A road network will consist of improving existing 2 track roads to, all-weather crown and ditch template roads.
- All roads will be maintained to meet BLM standards during the entire life of the project area.
- During interim reclamation the ditches will be seeded with a BLM approved seed mix to minimize erosion and maintain topsoil viability.
- Culverts will be installed on newly constructed access roads as applicable.

#### **Well Locations**

- The Smith Federal 31-1 well pad will be constructed with cuts/fills and topsoil/spoil piles surrounding

the pads' surface. Disturbances are outlined in Table 2.1. The Dart 4R will be drilled on an existing pad.

- The wells will use a semi-closed loop system. Lined pits at the pads will hold the cuttings.
- Several 400 bbl. to 500 bbl. tanks for oil and water will be placed on location for each well, only during drilling and constructions phase, then, moved to an existing oil well location.
- No staging areas, man camps/housing facilities are anticipated to be used off-site. Working trailers and sleeping trailers will be placed on the well pad during the drilling and completion of the well.
- If a well becomes a producer, production facilities will be located at the well site and will include a pumping unit. There will be no pits at the production phase of these well locations.
- Dikes will be constructed completely around production facilities, i.e. production tanks, water tanks, and heater treater. The dikes will be constructed, approximately 3 feet high, and hold the capacity of the largest tank plus 10%. If load-out lines are outside of the dike area, a drip barrel or "Getty-Box" will be installed under the end of all load-out lines.

### **Completion Operations**

The operator does not anticipate the need for hydraulic fracturing. There is a small chance that they may need too, if so it should be similar to the following:

- Hydraulic fracturing (HF) are operation done in approximately 20 stages. All fresh water will be contained in either approximately 60-170 HF tanks or large capacity storage tanks; see AR. No additional well pad disturbance is anticipated for HF operations. Completion flowback water will be held in the tanks on location and trucked to a permitted disposal facility. Presently, the Dart 3 (API#506036) injection well is the proposed disposal facility. See the AR for water sources.
- Flowback equipment and tanks are spotted 2-3 days before pumping. Sand silos are spotted and filled 2-3 days prior to pumping.
- Next pump trucks and chemical mixing equipment arrive and, when ready, operations continue for 36-48 hours or 3-5 days depending on the type of stimulation stage isolation (i.e. packers/sleeves or plug/perf respectively).
- Sand is continuously brought on site in semi-truck loads during pumping. It is necessary to have a safe turning radius available for these trucks. Pumping water may require heating in the winter months.
- Approximately 10,000bbls. of water will be used per well on the 21-1 & 31-1 wells. The Dart 4R re-entry will use approximately 800 bbls of water.
- A detailed completion operations plan is outlined in the surface use plan (SUP).
- Peak truck traffic to fill HF tanks for completion operations is estimated to be 700 roundtrips per well.

**Table 2.1. Disturbance Summary for POD:**

Activity	Number	Length (feet)	Width (feet)	Acres of Disturbance	Interim Disturbance
Dart 4R(re-drill)/Smith Federal 21-1 are on an existing well pad with cuts/fills and topsoil/spoil disturbances	1	255'	345'	2.57 ac.	0.23 ac.
Smith Federal 31-1 is a constructed pad, with cuts/fills and topsoil/spoil disturbances	1	345'	215'	2.17 ac.	0.23 ac.
Improved C & D Access Roads	1	3,450	50'	4 ac.	2.4 ac.
Buried Power Line (within Access Road Corridor)	1	3,450'	-	-	-
Buried gas, Oil & Water Line (Within Access Road Corridor)	2	3,450'	-	-	-
<b>Total Disturbance for this location</b>				<b>8.74 Ac.</b>	<b>2.86 Ac.</b>

The operator proposes about 2 acres of bladed, level pad site for the 31-1 location. The operator will then reduce the initial pad by about 1.8 acres with interim reclamation. The total of the pad's contribution to surface disturbance in the upper Powder River remains well within the total of the per-well surface disturbance envisioned and analyzed in the PRB FEIS. The proposed size is necessary to safely accommodate the equipment necessary for an effective well completion.

#### **Off Well Pad.**

Buried oil, gas and water flow lines and buried electric lines are needed for these wells. They will be in the access corridor. Power will be buried from a power drop, from existing power poles nearest the wells. Flow lines will be buried from the 2 wells and will be put into tanks on the existing Dart 1 tank battery.

#### **Plan of Operations.**

The proposal conforms to all Bureau standards and incorporates appropriate best management practices, required and designed mitigation measures determined to reduce the effects on the environment. BLM reviewed and approved a surface use plan of operations describing all proposed surface-disturbing activities pursuant to Section 17 of the Mineral Leasing Act, as amended. This analysis also incorporates and analyzes the implementation of committed mitigation measures in the SUP, drilling plan, and the standard conditions of approval (COAs) found in the PRB FEIS ROD, and Appendices A, and B.

#### **Reasonably Foreseeable Activity.**

The reasonably foreseeable activity (RFA) for this area includes oil/gas exploration on 40 acre spacing for vertical wells. This RFA is within and adheres to the RFA spacing analysis and the development of up to 54,200 fluid mineral wells, 3,200 of which are deep wells, (natural gas and oil) wells in the PRB FEIS.

### **2.3. Conformance to the Land Use Plan and Other Environmental Assessments**

This proposal does not diverge from the goals and objectives in the Buffalo Resource Management Plan (RMP), 1985, and generally conforms to the terms and conditions of that land use plan, and its amendments(2001, 2003, 2011), and laws including the Clean Air Act, 42 USC 7401-7671q (2006), the Clean Water Act, 33 USC 1251 et seq. (1972), etc.

## **3. AFFECTED ENVIRONMENT**

This section briefly describes the physical and regulatory environment that may be affected by the alternatives in Section 2, or where changes in circumstances or regulations occurred since the approval of

analyses, incorporated by reference in this EA. The PRB FEIS considered a no action alternative (pp. 2-54 to 2-62) in evaluating a development of up to 54,200 fluid mineral wells. Nearly all of the PRB's coalbed natural gas (CBNG) wells and over 60% of the deep oil and gas wells are hydraulically fractured; BLM and Goolsby 2012. The BLM uses the aggregated effects analysis approach - incorporating by reference the circumstances and developments approved via the subsequent NEPA analyses for overlapping, similar and intermingled developments coincident to this proposal area to retain currency in the no action alternative and later, in cumulative effects. 615 F. 3d 1122 (9th Cir. 2010). The number of conventional wells in the Buffalo planning area is 1313, which includes 783 horizontal wells (federal, fee, and state) (as of April 2013). This represents 41% of the projected 3,200 in the 2003 PRB ROD. This agrees with the PRB FEIS which analyzed the reasonably foreseeable development rolling across the PRB of 51,000 CBNG and 3,200 natural gas and oil wells. BLM determined a minimum of 115 townships from the northern borders of Sheridan and Campbell Counties to the southern border of Campbell County and the east side of Johnson County, are a developed field, for fluid minerals because of the existing federal developments. These APD proposals are in the developed field. The State of Wyoming and BLM will likely continue to approve more wells in the area, in the near future. In addition, other operators, as well as this projects operator are likely to continue seeking permits to develop unconnected leases in the affects analysis areas near the project area; decisions to approve or deny future proposals will occur following APD submittal. Development occurring on non-federal surface and non-federal mineral estate would continue, if permitted.

### **3.1. Air Quality**

Refer to the PRB FEIS pp. 3-291 to 3-299, for a 2003-era description of the air quality conditions. BLM incorporates by reference, Update of Task 3A Report for the Powder River Basin Coal Review Cumulative Air Quality Effects for 2020, BLM (AECOM), 2009, (Cumulative Air Quality Effects, 2009) as it captures the cumulative air quality effects of present and projected PRB fluid and solid mineral development. PRB coal review documents are available at:

[http://www.blm.gov/wy/st/en/programs/energy/Coal\\_Resources/PRB\\_Coal/prbdocs.html](http://www.blm.gov/wy/st/en/programs/energy/Coal_Resources/PRB_Coal/prbdocs.html).

The Environmental Protection Agency (EPA) established ozone standards in 2011. Existing air quality in the PRB is “unclassified/attainment” with all ambient air quality standards. It is also in an area that is in prevention of significant deterioration zone. PRB air quality is a rising concern due to ozone in the oil and gas producing Upper Green River Basin that became one of the nation’s 40 “nonattainment” zones for ozone in 2012; in addition to PRB-area air quality alerts issued in 2011-2014 for particulate matter (PM), attributed to coal dust. Four sites monitor the air quality in the PRB: Cloud Peak in the Bighorn Mountains, Thunder Basin northeast of Gillette, Campbell County south of Gillette, and Gillette. In addition, the Wyoming Air Resource Monitoring System (WARMS) measures meteorological parameters from 9 sites throughout the State, and particulate concentrations from 5 of those sites, monitors speciated aerosol (3 locations), and evapotranspiration rates (1 location). The sites monitoring air quality for the Powder River Basin are located at Sheridan, South Coal Reservoir, Buffalo, Fortification Creek, and Newcastle. The northeast Wyoming visibility study is ongoing by the Wyoming Department of Environmental Quality (WDEQ). Sites adjacent to the Wyoming PRB-area are at Birney on the Tongue River 24 miles north of the Wyoming-Montana border, Broadus on the Powder River in Montana, and Devils Tower. Adgate, et al. (2014) advanced a hypothesis that air and water quality effects from HF may negatively impact human health but concluded that there were “major uncertainties” and a “paucity of baseline data” after drilling 153,260 wells since 2004. They called for more research funding.

Existing air pollutant emission sources in the region include:

- Exhaust emissions (primarily CO and nitrogen oxides (NOx)) 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;
- Particulate matter (PM), dust, generated by vehicle travel on unpaved roads, windblown dust from neighboring areas, road sanding during the winter months, coal mines, and trains;

- Transport of air pollutants from emission sources located outside the region;
- NOx, PM, and other emissions from diesel trains and,
- SO2 and NOx from power plants.

### **3.2. Soils, Ecological Sites, and Vegetation**

BLM incorporates by reference the soils and vegetation sections in the PRB FEIS, Chapter 3, pages 78 to 89 and 92 to 106 and in Section 3 of Stephens Energy, Federal 7-25, pages 5 & 6 (approved 4/26/12) and the Trend Exploration, 11 APD Package EAs, Section 3, pages 4, 5 & 6 (approved 11/9/10, listed in Table 1.1. Soils, ecological sites, and vegetation found in the projects areas are similar to those analyzed in the above mentioned NEPA documents. Dominant Ecological Sites and Soils affected in the project area are Loamy, Shallow Clayey and Sandy Ecological sites which contain sands, loams and clay soils.

### **3.3. Water Resources**

The well locations are in the Little Powder River watershed. For water resource impacts from oil drilling activities, BLM incorporates the respective analyses in the Anadarko Petroleum Crazy Cat East EA (WY-070-EA13-028). Except for the Little Powder River, most area drainages are ephemeral to intermittent. The channels are primarily well vegetated grassy swales, without defined bed or bank. See the PRB FEIS for a more detailed surface water discussion of this local. The Wyoming State Engineer's Office (WSEO) has authority for regulating water rights issues and permitting impoundments for the containment of the State's surface waters. The WY Oil and Gas Conservation Commission (WOGCC) has authority for permitting and bonding off channel pits located over state and fee minerals. Adgate, et. al., and news sources reveal a minor controversy over a state's non-disclosure of proprietary HF fluids while release decisions receive administrative and court reviews.

The historical use for the area's groundwater is for stock or domestic water. A search of the WSEO Ground Water Rights Database as presented in Wesco's MSUP showed a total of 4 permitted water wells in a 1 mile radius of the proposed wells' vertical bore shafts with depths of wells between 250-300 feet b.g.s. For more groundwater information refer to the PRB FEIS, pp. 3-1 to 3-36. The largest fresh water aquifer in the expected zone of influence of the proposed wells is within the Fox Hills Formation at an anticipated depth of 1,676 to 2,039 ft bgs.

### **3.4. Invasive or Noxious Species**

Weeds identified in this project include: cheatgrass, leafy spurge, Canadian thistle, whitetop, Russian Knapweed, cocklebur and buffalo burr. The operator has developed and Integrated Pest Management Plan and has committed to control weeds in the project area.

### **3.5. Wildlife**

The PRB FEIS identified wildlife species occurring in the PRB, pp. 3-113 to 3-206. BLM performed a habitat assessment in the project area on January 25, 2014; also a formal wildlife survey was completed by ICF International (Camp Creek Area Wells Wildlife Surveys, 2014). The biologist evaluated impacts to wildlife resources and recommended project modifications where wildlife issues arose. BLM wildlife biologists also consulted databases compiled and managed by BLM BFO wildlife staff, the PRB FEIS, WGFD datasets, and the Wyoming Natural Diversity Database (WYNDD) to evaluate the affected environment for wildlife species that may occur in the project area. This section describes the affected environment for wildlife species known or likely to occur in the project area that are likely to be impacted by the action. Rationale for species not discussed in detail below can be referenced in the administrative record; Table W.1.(Summary of Sensitive Species Habitat and Project Effects), and Table W.2. (Summary of Threatened and Endangered Species Habitat and Project Effects).

### 3.5.1. Threatened, Endangered, Candidate, Sensitive Species

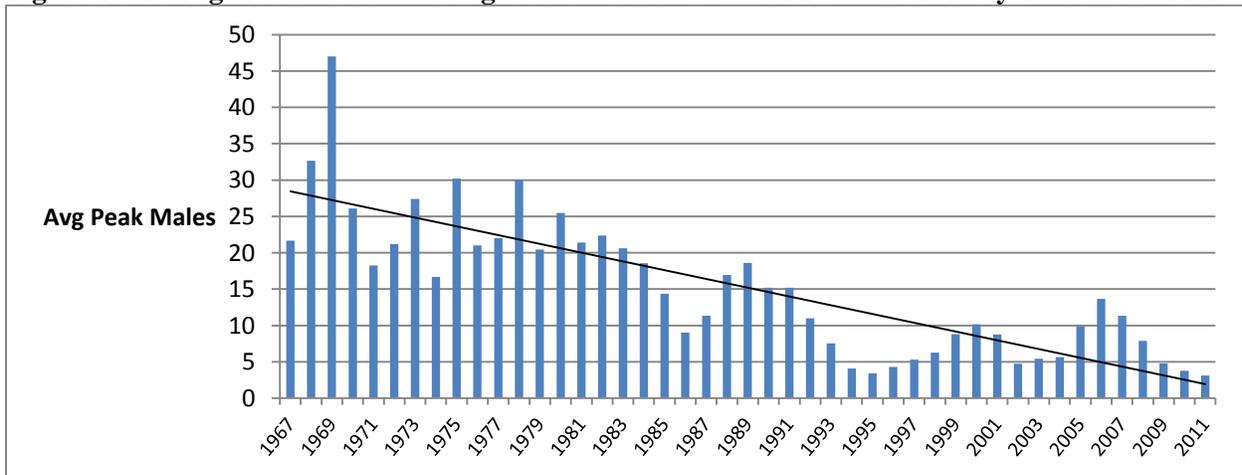
The Buffalo BLM receives a species list periodically from the FWS concerning threatened, endangered, proposed, and candidate species. Species included on that list that would be impacted by the proposed project will be discussed below.

#### 3.5.1.1. Greater Sage-Grouse (GSG)

The PRB FEIS has a detailed discussion on GSG ecology and habitat, pp. 3-194 to 3-199. Subsequently the USFWS determined the Greater Sage-Grouse (*Centrocercus urophasianus*, GSG) warrants federal listing as threatened across its range, but precluded listing due to other higher priority listing actions, 75 Fed. Reg. 13910 to 14014, Mar. 23, 2010; 75 Fed. Reg. 69222 to 69294, Nov. 10, 2010. GSG are a WY BLM sensitive species and a WGFD species of greatest conservation need (SGCN) because of population decline and ongoing habitat loss. The 2012 population viability analysis for Northeast Wyoming found there remains a viable population of GSG in the PRB (Taylor et al. 2012). However, threats from energy development and West Nile virus (WNV) are impacting future viability (Taylor et al. 2012). The BLM IM WY-2012-019 establishes interim management policies for proposed activities on BLM-administered lands, including federal mineral estate, until RMP updates are complete.

The GSG population in northeast Wyoming is exhibiting a steady long term downward trend, as measured by lek attendance (WGFD 2011b). Figure 1 illustrates a 10-year cycle of periodic highs and lows. Each subsequent population peak is lower than the previous peak. Research suggests that the declines since 2001 are a result, in part, of energy development (FWS 2010, Taylor et. al. 2012).

**Figure 1. Average Peak of Greater Sage-Grouse Males at WGFD Count Leks by Year in the PRB**



Surveys for undocumented GSG leks were performed in spring 2014 by ICF international (Camp Creek Area Wells Wildlife Surveys, 2014) and no new leks were documented.

The proposed project resides within the North Gillette Greater Sage-Grouse Core Population Area and contains suitable GSG nesting, brood-rearing, and winter habitats. The area has experienced moderate levels of energy development in the past. Existing oil and gas infrastructure is present and is immediately adjacent to the proposed wells. A DDCT (Density Disturbance Calculation Tool) was completed in accordance with guidelines set forth by the Governor of Wyoming's Sage-Grouse Executive Order 2011-5 (SGEO) and the BLM received the recommendation letter from the Wyoming Game and Fish Department (WYGF) on October 21, 2014 which can be referenced within the administrative record.

The DDCT review process identified three occupied GSG leks (ZV Creek Satellite, ZV Creek I, and the

ZV Creek IV) within the 55,373.17 acres of the DDCT analysis area and these leks range from 2.6 miles to 3.45 miles from the project area. Also within the DDCT boundary, the area has 3.49% surface disturbance prior to the proposed project.

### **3.5.2. Special Status (Sensitive) Species (SSS)**

The PRB FEIS discussed the affected environment for SSS, p. 3-174 to 201.

#### **3.5.2.1. Bald Eagle**

The affected environment for bald eagles is described in the PRB FEIS on pg. 3-175. At the time the PRB FEIS was written, the bald eagle was listed as a threatened species under the ESA. Due to successful recovery efforts, it was removed from the ESA on 8 August 2007. The bald eagle remains under the protection of the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. In order to avoid violation of these laws and uphold the BLM's commitment to avoid any future listing of this species, the BLM shall continue to comply with all conservation measures and terms and conditions identified in the Powder River Basin Oil and Gas Project Biological Opinion (PRB Oil & Gas Project BO), #WY07F0075) (USFWS 2007).

In addition to being listed as a Wyoming BLM sensitive species, bald eagles are a WGFD SGCN with a NSS2 rating, due to populations being restricted in numbers and distribution, ongoing loss of habitat, and sensitivity to human disturbance. The Wyoming Bird Conservation Plan rates them as a Level I species, indicating they are clearly in need of conservation action.

During the onsite visit bald eagles (BAEA) were noted foraging in the area. Although there are no BAEA nests documented within a mile of the proposed project the Little Powder River is approximately 0.12 miles from the nearest proposed well, and numerous cottonwood galleries are associated with the water way. The presence of deciduous trees along the river provides suitable winter roosting habitat. Winter roost surveys were completed according to BLM approved protocol by ICF international in 2014. From the 2014 survey information in conjunction with historic roost information it has been determined that the area is indeed used by BAEA for winter roosting. There are two locations within 1 mile that are believed to be used consistently by roosting BAEA, the identified trees where roosting behavior has been repeatedly observed are approximately 0.51 miles and 0.90 miles away from the nearest proposed disturbance. A livestock operation and private residence is in closer proximity to suitable roosting habitat and identified roosts than are the proposed wells and their associated infrastructure.

#### **3.5.3. Big Game**

The big game species occurring in the project area are white-tailed deer, mule deer and pronghorn. The PRB FEIS discussed the affected environment for pronghorn, mule deer, and white-tailed deer, on pp. 3-117 to 3-122, pp. 3-127 to 3-132, and 3-122 to 3-127, respectively.

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

The PRB FEIS discussed the affected environment for plains sharp-tailed grouse on pp. 3-148 to 3-150. Sharp-tailed grouse inhabit short and mixed-grass prairie, sagebrush shrublands, woodland edges, and river canyons. In Wyoming, this species is found where grasslands are intermixed with shrublands, especially wooded draws, shrubby riparian area, and wet meadows.

Suitable habitat is present within the proposed project area and the species is known to occur. The mosaic of grasslands and sagebrush-grasslands that occur in the area may provide nesting and brood-rearing habitat. The nearest known plains sharp-tailed grouse lek is within approximately 2.6 miles of the nearest well, and the lek was inactive in 2014. Although two male birds were noted within the area during surveys (ICF, 2014).

### **3.5.5. Raptors**

The PRB FEIS discussed the affected environment for raptors, pp. 3-141 to 3-148. According to the BLM raptor database and wildlife surveys (ICF, 2014) there are no documented raptor nest sites within 0.5 miles of the project boundary.

Most raptor species nest in a variety of habitats including (but not limited to): native and non-native grasslands, agricultural lands, live and dead trees, cliff faces, rock outcrops, and tree cavities. Suitable nesting habitat is present in the project area. Raptor species known or suspected to occur in the area include golden eagle, northern harrier, Swainson's hawk, American kestrel, short-eared owl, great horned owl, red-tailed hawk, ferruginous hawk, and rough-legged hawk (winter resident).

### **3.5.6. Migratory Birds**

The PRB FEIS discussed the affected environment for migratory birds, pp. 3-150 to 3-153. The Lance Sahara POD EA, WY-070-EA13-72, Section 3.7.2.2, p.16 is incorporated here by reference due to similar habitats and proposed action. Site specific information follows:

Habitats occurring near the proposed well location include sagebrush steppe grasslands, mixed grass prairie, and mature deciduous trees. Many species that are of high management concern use these areas for their primary breeding habitats (Saab and Rich 1997). Sensitive species that have the potential to occur in the project area are: Brewer's sparrow, sage thrasher, loggerhead shrike, and grasshopper sparrow.

### **3.6. Cultural**

In accordance with section 106 of the National Historic Preservation Act, BLM must consider impacts to historic properties (sites that are eligible for or listed on the National Register of Historic Places (NRHP)). For an overview of cultural resources that are generally found within BFO the reader is referred to the *Draft Cultural Class I Regional Overview, Buffalo Field Office* (BLM, 2010). A Class III (intensive) cultural resource inventory (BFO project no. 70140080) was performed in order to locate specific historic properties which may be impacted by the proposed project. No cultural resources have been identified within the proposed project area.

## **4. ENVIRONMENTAL EFFECTS**

**No Action Alternative.** BLM analyzed the no action alternative as Alternative 3 in the PRB FEIS, and it subsequently received augmentation of the effects analysis in this EA through the analysis of mineral projects, their approval, and construction; and through the analysis and approval of other projects. BLM incorporates by reference these analyses in this EA. This updated the no action alternative and cumulative effects. The project area has surface disturbance from existing roads, well pads, and oil and gas facilities. Under the no action alternative, on-going well field operations would continue as would the development of approved single and multi-well pad APDs. The production and the drilling and completion of these new wells would result in noise and human presence that could affect resources in the project area; these effects could include the disruption of wildlife, the dispersal of noxious and invasive weed species, and dust effects from traffic on unpaved roads. Present fluid mineral development in the PRB is under half of that envisioned and analyzed in the PRB FEIS. There is only a remote potential for significant effects above those identified in the PRB FEIS to resource issues as a result of implementing the no action alternative.

### **Alternative B, Proposed Action (Proposal)**

#### **4.1. Air Quality**

BLM incorporates by reference the air quality direct, indirect, cumulative, and residual effects from the analyses in Table 1.1, as they are materially similar to those for this proposal. BLM incorporates by

reference the analysis found in the August 2012 Lease Sale EA, WY-070-EA12-44, pp. 45-51 (air quality, greenhouse gas emissions, and visibility). Air quality impacts modeled in the PRB FEIS and Cumulative Air Quality Effects, 2009 concluded that PRB projected fluid and solid development would not violate state, or federal air quality standards and this project is within the development parameters. Adgate, et. al., found that most human health studies focused on air quality effects on humans living near wells and summarized that while some effects “estimated lifetime excess cancer risks, which were in the range of concern but below the range where action is typically taken”. None of the 2 proposed wells are near residences. The consistently high WY winds provide an inherent dilution for any fugitive emissions so air quality concerns, similar to its controversy, are negligible.

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

Impacts anticipated occurring and mitigation considered with these proposals will be similar to those analyzed in the following PRB FEIS, Chapter 4, pages 134 to 149, 153 to 172 and page 408 and in Section 4, pages 8, 9 and 10 of Stephens Energy, Federal 7-25 EA and Trend Exploration, 11 APD Package EA Section 4, pages 17, 18 and 19, listed in Table 1.1. Direct, Indirect, Cumulative, Residual Effects, are all incorporated here by reference. These incorporated EA sections analyze the historical values and settings for soils, ecological sites, and vegetation. Ecological types in this proposed project and the effects, and mitigations to them, are similar to those in the reference PODs.

#### **4.3. Water Resources**

Adherence to the drilling COAs, the setting of casing at appropriate depths, following safe remedial procedures in the event of casing failure, and using proper cementing procedures should protect fresh water aquifers above the drilling target zone. Compliance with the drilling and completion plans and Onshore Oil and Gas Orders Nos. 2 and 7 minimize adverse impacts on ground water. The volume of water produced by this federal mineral development is unknowable at the time of permitting. BLM incorporates by reference the surface water resources direct, indirect, cumulative, and residual effects from the Crazy Cat East EA.

Wesco proposed two permitted sources for their water needed to drill and develop the wells. The water will either be trucked to the well pads and stored in tanks and/or a pit. For the drilling and development of each well, they propose that 10,000 bbls of water per well for the Smith 21-1 (if necessary) and 31-1 wells and 800 bbls for the Dart 4R re-entry, will be used. Refer to the MSUP for each proposed well; see AR.

The anticipated depths of the Fox Hills Formation are between 1,676 to 2,020 ft bgs for the proposed wells. The operator will use centralizing stabilizers on each casing joint through the depths of the Fox Hills Formation to insure the cementing encapsulates the casing and seals the formation off from contamination. The cementing off of the formation will extend 50 feet above and below the formation. Surface casing will extend to depth of 163 feet below ground surface for the Dart 4R re-entry and 750 feet bgs for the Smith 31-1 well. If the Dart 4R re-entry is not successful and a new well is drilled its surface casing will also extend to a depth of 750 bgs. Water wells within 1 mile of the wells were drilled to depths of 250-300 feet b.g.s. There are no water wells within ½ mile of the proposed Wesco wells. Wesco committed in the MSUP to abide to the state and federal regulations for the drilling and production of the well, therefore, no direct or indirect adverse effects are anticipated. This will ensure that ground water will not be adversely impacted by well drilling and completion operations.

At the time of permitting, the volume of water that will be produced in association with these federal minerals is unknown. The operator will have to produce the wells for a time to be able to estimate the water production. In order to comply with the requirements of Onshore Oil and Gas Order #7, Disposal of Produced Water, the operator will submit a Sundry to the BLM within 90 days of first production which includes a representative water analysis as well as the proposal for water management.

The WOGCC monitor and regulate the chemicals for drilling and completion as well as Class II underground injection disposal. “BLM may rely on the actions of state regulators. The IBLA and federal courts recognized it is appropriate for BLM to assume a proposed action complies with state permitting requirements, and rely on state analysis when evaluating the significance of effects. *Wyo. Outdoor Council v. U.S. Army Corps of Eng’rs*, 351 F. Supp. 2d 1232, 1244 (D. Wyo. 2005); PRBRC, 180 IBLA 32, 57 (2010); *Bristlecone Alliance*, 179 IBLA 51, 74-77 (2010).” In *Wyoming Outdoor Council*, the District Court held the Corps may rely on the [state] permitting process to “ameliorate any concerns that impacts to water quality will be significant.” *Id.*

During construction and subsequent production of these wells, Wesco committed to stabilize the constructed area to reduce the risk of sediment transport due to erosion. This and complying with WDEQ Storm Water Pollution Prevention criteria will minimize impacts to surface water resources in the area.

Historically, the quality of water produced in association with conventional oil and gas has been such that surface discharge would not be possible without treatment. Initial water production is quite low in most cases. Wesco proposes to dispose of the produced and flow back water to state permitted facilities by deep re-injection into the Dart 3 injection well. This disposal method would be protective of groundwater resources when performed in compliance with state and federal regulations. The water will either be trucked or piped via underground water lines to the locations from the storage tanks and/or reserve pit near a well pad. For more information refer to the MSUP for each APD; see AR.

#### **4.4. Invasive Species**

##### **4.4.1. Direct and Indirect Effects**

The operator has committed to the control of noxious weeds and species of concern using the following measures identified in their Integrated Pest Management Plan (IPMP): 1) control methods, including frequency; 2) preventive practices; and 3) education. 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, applicant committed measures will reduce potential impacts from noxious weeds and invasive plants.

##### **4.4.2. Cumulative Effects**

Cumulative effects across the project area would include a long-term loss of soil productivity associated with well pads and road construction. 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.

##### **4.4.3. Mitigation Measures**

Refer to the Weed Control Program in the SUP for a complete listing of general and species-specific applicant committed measures to address this issue. No additional site specific COAs are necessary.

##### **4.4.4. Residual Effects**

The operators control efforts are limited to the surface disturbance associated with the project’s implementation. Cheatgrass and other invasive species that are present in non-physically disturbed project areas are anticipated to continue to spread unless control efforts are expanded. Cheatgrass and to a lesser extent, Japanese brome are found in such high densities throughout NE Wyoming that a control program is not considered feasible at this time; these annual bromes would continue to be found within the project area.

## **4.5. Wildlife**

### **4.5.1. Wildlife Threatened, Endangered, Proposed and Candidate Species**

#### **4.5.1.1. Greater Sage-Grouse**

##### **4.5.1.1.1. Direct and Indirect Effects**

The PRB FEIS discusses impacts to GSG on pp. 4-257 to 4-273. Implementation of the proposal will impact GSG habitat and individuals. Impacts to GSG are generally a result of loss and fragmentation of sagebrush habitats associated with roads and infrastructure. Research indicates that GSG hens also avoid nesting in developed areas. Impacts to GSG associated with energy development are discussed in detail in the 12-Month Findings for Petitions to List the Greater Sage-Grouse as Threatened or Endangered (FWS 2010) and chapters 15-21 of Greater Sage-grouse Ecology and Conservation of a Landscape Species and its Habitats (Knick and Connelly 2011).

Declines in lek attendance associated with oil and gas development may be a result of a suite of factors including avoidance (Holloran et al. 2005, Holloran et al. 2007, Aldridge and Boyce 2007, Walker et al. 2007, Doherty et al. 2008, WGFD 2009), loss and fragmentation of habitat (Connelly et al. 2000, Braun et al. 2002, Connelly et al. 2004, WGFD 2004, Rowland et al. 2005, WGFD 2005, Naugle et al. 2011), reductions in habitat quality (Braun et al. 2002, WGFD 2003, Connelly et al. 2004, Holloran et al. 2005) and changes in disease mechanisms (Naugle et al. 2004, WGFD 2004, Walker et al. 2007, Cornish pers. comm.).

Construction of the well and the associated infrastructure will cause fragmentation of sagebrush stands and result in the direct loss of GSG habitat. Noise and human disturbance associated with roads, construction, drilling, and completion will be disruptive to GSG. Implementation of the project will adversely impact nesting habitat, both through direct loss and avoidance of the area by GSG due to fragmentation and anthropogenic activity.

It is the policy of BLM WY, until RMPs are final, to manage GSG habitats consistent with Instruction Memorandum (IM) No. WY-2012-019, *Greater Sage-Grouse Habitat Management Policy on Wyoming Bureau of Land Management (BLM) Administered Public Lands Including the Federal Mineral Estate*. This IM binds BLM sage-grouse management to the State of Wyoming's Executive Order 2011-5.

According to the DDCT analysis, the proposed action would increase the existing surface disturbance from 3.49% to 4.96% and an average of 0.57 mineral locations per 640 acres (reference the administrative record). Both these numbers are under the Core Area requirements for minimizing impacts of 5% and 1/640 respectively.

##### **4.5.1.1.2. Cumulative Effects**

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 [PRB] or the entire range of the species is not likely to be compromised (pg. 4-270).”

Recent studies documented the additive impacts of energy development and WNV as a threat to GSG persistence in the PRB (Taylor et al. 2012, Garton et al. 2011). The cumulative and synergistic effects of oil and gas development and WNV in the PRB area may continue to impact the local GSG population, causing further declines in lek attendance, and could result in local extirpations: “[f]indings reflect the status of a small remaining sage-grouse population that has already experienced an 82% decline within the expansive energy fields.” (Taylor et al. 2012). This study found there remains a viable population of GSG in the PRB; however, threats from energy development and West Nile Virus (WNV) are impacting future viability.

Taylor et al summarized that continued energy development within and around the core population areas will reduce the PRB core population areas' habitat value. WNV outbreaks combined with energy development reduce sage-grouse populations and interact to exacerbate population declines. The effects of one WNV outbreak year could cut a population in half. Absent a WNV outbreak, or another stochastic event of similar magnitude, immediate extirpation is unlikely. The Wyoming core strategy has been found sufficient to conserve sage-grouse within Wyoming, as stated in the June 24, 2011 USFWS letter to Wyoming Governor (see administrative record).

Compliance with timing, density, and distance restrictions imposed by WY-2012-019, completing core population area habitat improvements, and aggressive oil and gas reclamation in sage-grouse habitat provide the best opportunity for supporting sage-grouse populations within the North Gillette Core Population Area and in the Powder River Basin.

#### **4.5.1.1.3. Mitigation Measures**

As the Buffalo RMP is currently in revision, it is the policy of BLM WY to manage GSG habitats consistent with the mitigation measures set forth by the BLM Wyoming State Office IM No. WY-2012-019, which states that for areas inside of core population areas and connectivity habitats, "Surface occupancy and/or disruptive activities are prohibited on or within a six tenths (0.6) mile radius of the perimeter of occupied sage-grouse leks. Surface disturbing and/or disruptive activities are prohibited from March 15–June 30 to protect sage-grouse nesting and early brood rearing habitat. Apply this restriction to all nesting and early brood-rearing habitats inside core areas regardless of distance from the lek."

In order to reduce the likelihood that noise, construction, and human disturbance impact nesting GSG, BLM will implement a timing limitation on all disruptive activities within GSG habitat during the construction, drilling and hydraulic fracturing phases. The intent of this timing restriction is to decrease the likelihood that GSG will avoid these areas and increase habitat quality by reducing noise and human activities during the breeding season. The BLM would also implement a limitation on noise levels at the edge of occupied leks in the project area.

#### **4.5.1.1.4. Residual Effects**

A timing limitation restricting surface disturbance does not mitigate habitat loss, fragmentation or changes in disease mechanisms. Noise and human disturbance resulting from maintenance and production activities are likely to impact GSG nesting in the area for the life of the project. Suitability of the project area for GSG will be negatively affected due to habitat loss, fragmentation, and proximity of human activities associated with oil and gas development.

Current research does not identify specific components of energy development that measurably decrease impacts to GSG or their habitats. Even in areas where a variety of mitigation measures were applied, negative population impacts were still measurable when well density exceeded 1 well per square mile. Management of energy development based on current core area configurations in the Powder River Basin and associated lease stipulations, conditions of approval, and best management practices (BMPs), may not be sufficient to protect the population viability of PRB GSG.

### **4.5.2. Sensitive Species**

The PRB FEIS discusses impacts to SSS on pp. 4-257 to 4-265. Site specific effects to SSS are described below.

#### **4.5.2.1. Bald Eagle**

##### **4.5.2.1.1. Direct and Indirect Effects**

Impacts to bald eagles are discussed in the PRB FEIS, pp. 4-251 to 4-253.

Human activities, traffic, and construction may displace eagles from winter roosts, or nests within the suitable habitat along the Little Powder River.

#### **4.5.2.1.2. Cumulative Effects**

The cumulative effects for bald eagles are described in the PRB FEIS, pp. 4-251 to 4-253.

#### **4.5.2.1.3. Mitigation Measures**

To reduce the risk of disruption to the winter roosting activities of bald eagles, BFO would require a 1.0 mile radius timing limitation on all winter roost habitat between November 1 and April 1, annually. This timing restriction should allow for adequate mitigation and impacts from drilling and operations should be minimal.

#### **4.5.2.1.4. Residual Effects**

Even with timing limitations, habitat may be degraded to a point that the area no longer provides habitat requirements for wintering bald eagles. A 0.5 mile buffer may not be sufficient to protect bald eagles from disturbance. A 1.0 mile timing restriction on construction activities does nothing to protect valuable habitats from disturbance and also does not mitigate impacts associated with fee development, and habitat may be degraded over time to such an extent that bald eagle fitness may be reduced.

### **4.5.2.2. Big Game**

#### **4.5.2.2.1. Direct and Indirect Effects**

The PRB FEIS discusses impacts, including direct and indirect effects, cumulative effects, and residual effects to big game on pp. 4-181 to 4-215. Identified big game habitats would be directly disturbed with the construction of wells, and associated infrastructure. Long term disturbance would be direct habitat loss. Short-term disturbances also result in direct habitat loss; however, they should provide some habitat value as these areas are reclaimed and native vegetation becomes established.

In addition to the direct habitat loss, 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 WGFDF indicates a well density of 4 wells per section creates a high level of impact for big game and that avoidance zones around mineral facilities overlap creating contiguous avoidance areas (WGFDF 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, Sawyer et al. 2006).

Big game animals are expected to return to the project area following construction; however, populations would 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 7 years to habituate to oil and gas activities, avoidance of roads and facilities was determined to be long term and chronic” (Lustig 2003). Mule deer have been shown to avoid all types of well pads but tended to select areas farther from well pads associated with higher levels of traffic (Sawyer et al. 2009). 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).

Winter big game diets are sub-maintenance, meaning they lose weight and body condition as the winter progresses. Survival below the maintenance level requires behavior that emphasizes energy conservation. Canfield et al. (1999) pointed out that forced activity caused by human disturbance exacts an energetic disadvantage, while inactivity provides an energetic advantage for animals. Geist (1978) further defined

effects of human disturbance in terms of increased metabolism, which could result in illness, decreased reproduction, and even death.

Energy development activities that occur within big game habitats during the spring will likely displace adult females and juveniles due to the human presence in the area. This may cause reduced survival rate of individuals that must expend increased energies to avoid such activities.

#### **4.5.2.2.2. 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. 4-181 to 4-215.

#### **4.5.2.2.3. Mitigation Measures**

No mitigation is proposed with Alternative B.

#### **4.5.2.2.4. Residual Effects**

No residual impacts are identified.

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

#### **4.5.2.3.1. Direct and Indirect Effects**

Direct and indirect effects to sharp-tailed grouse are described in the PRB FEIS pp. 4-221 to 4-226 and expected are similar to those described in section Greater Sage-Grouse section above. Sharp-tailed grouse may avoid habitats adjacent to the project area. The nearest known lek is not expected to be directly impacted. Construction and maintenance activities associated with development of the **proposed project** will cause direct habitat loss and fragmentation.

#### **4.5.2.3.2. Cumulative Effects**

The PRB FEIS described the cumulative effects to sharp-tailed grouse, pp. 4-221 to 4-226.

#### **4.5.2.3.3. Mitigation Measures**

None identified.

#### **4.5.2.3.4. Residual Impacts**

None Identified.

### **4.5.2.4. Raptors**

#### **4.5.2.4.1. Direct and Indirect Effects**

The PRB FEIS discussed direct and indirect effects to raptors (pp. 4-216 to 4-221). This project would result in direct and indirect habitat losses associated with declines in habitat effectiveness.

Although no nests have been identified within the proposed project area the suitable nesting habitat exists and raptors may initiate nests in the future.

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, they could be sufficient to cause adult birds to remain away from the nest and their chicks for the duration of the activities. This absence can lead to overheating or chilling of eggs or chicks. Prolonged disturbance can also lead to the abandonment of the nest by the adults. Both actions can result in egg or chick mortality.

#### **4.5.2.4.2. 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.

#### **4.5.2.4.3. Mitigation Measures**

None identified,

#### **4.5.2.4.4. Residual Impacts**

Raptors may abandon future nests due to foraging habitat alteration associated with development or sensitivity to well or infrastructure placement. All raptors in the vicinity of the project would likely be impacted to some extent by the human disturbance associated with operation and maintenance of the project. Routine human activities near these nests can draw increased predator activity to the area and increase nest predation. Declines in breeding populations of some species that are more sensitive to human activities may occur.

#### **4.5.2.5. Migratory Birds**

##### **4.5.2.5.1. Direct and Indirect Effects**

The PRB FEIS discussed direct and indirect effects to migratory birds on pp. 4-231 to 4-235. BLM analyzed the effects to migratory birds from surface disturbing and disruptive activities associated with development of horizontal oil wells in the Sahara POD EA, WY-070-EA13-72, 2013, Section 4.6.2.2, pp. 31-33, incorporated here by reference. Effects and mitigation associated with this project are similar in nature, with the following additional site-specific information. During the onsite, the BLM biologist identified suitable nesting habitat present for several BLM sensitive sagebrush obligates. Construction of all of the well pads within the proposal and associated infrastructure will remove habitat and could kill BLM sensitive migratory birds, or destroy eggs, if the habitat is removed during the nesting season.

Heater treaters, and similar facilities with vertical open-topped stacks or pipes, can attract birds. Facilities without exclusionary devices pose a mortality risk. Once birds crawl into the stack, escape is difficult and the bird may become trapped (U.S. v. Apollo Energies Inc., 611 F.3d 679 (10th Cir. 2010); see also Colorado Oil and Gas Commission, Migratory Bird Policy, accessed February 13, 2012). To minimize these effects, the operator will equip all open-top pits, tanks, and pipes containing hydrocarbons with nets, screens, or other avian exclusion devices to prevent injury or death to migratory birds.

##### **4.5.2.5.2. Cumulative Effects**

The cumulative effects associated with alternative B are within the analysis parameters and impacts described in the PRB FEIS, p. 4-235.

##### **4.5.2.5.3. Mitigation Measures**

BLM prohibits removal of occupied sagebrush obligate migratory bird habitat during the breeding season (May 1- July 31), unless a pre-construction nest survey (within approximately 10 days of construction planned May 1-July 31) is completed. If surveys will be conducted, the operator will follow "2012 Sagebrush BLM Sensitive Migratory Bird Nest Protocol" found at the following web address:

[http://www.blm.gov/wy/st/en/field\\_offices/Buffalo/wildlife.html](http://www.blm.gov/wy/st/en/field_offices/Buffalo/wildlife.html)

##### **4.5.2.5.4. Residual Effects**

Nests initiated after the first week in July may be destroyed by construction after August 1st. Migratory birds nesting adjacent to the well pad or road may be disturbed by construction and production activities. A timing limitation does nothing to mitigate loss and fragmentation of habitat. Suitability of the project area for migratory birds will be negatively affected due to habitat loss and fragmentation and proximity of human activities associated with oil and gas development.

**4.6. Cultural Resources**

BLM policy states that a decision maker’s first choice should be avoidance of historic properties (BLM Manual 8140.06(C)). If historic properties cannot be avoided, mitigation measures must be applied to resolve the adverse effect. No historic properties will be impacted by the proposed project. Following the *State Protocol Between the Wyoming Bureau of Land Management State Director and The Wyoming State Historic Preservation Officer*, 2006 Section VI(A)(1), the Bureau of Land Management electronically notified the Wyoming State Historic Preservation Officer (SHPO) on 10/31/14 that no historic properties exist within the area of potential effect (APE). If any cultural values (sites, features or artifacts) are observed during operation, they will be left intact and the Buffalo Field Manager notified. If human remains are noted, the procedures described in Appendix L of the PRB FEIS must be followed. Further discovery procedures are explained in Standard COA (General)(A)(1) and in Appendix K of the Wyoming Protocol.

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. Destruction of any archeological resource results in fewer opportunities to study of past human life-ways, to study changes in human behavior through time, or to interpret 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 may 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. Oil and gas development on split estate often includes construction of infrastructure that does not require permitting by BLM. Project applicants may integrate infrastructure associated with wells draining fee minerals with wells that require federal approval. BLM has no authority over fee actions, 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. Archeological inventories reveal the location of sensitive sites and although the BLM is obligated to protect site location data, information can potentially get into the wrong hands resulting in unauthorized artifact collection or vandalism. BLM authorizations that result in new access can inadvertently lead to impacts to sites from increased visitation by the public.

**5. List of Preparers: Persons and Agencies Consulted (BFO unless otherwise noted)**

<b>Position/Organization</b>	<b>Name</b>	<b>Position/Organization</b>	<b>Name</b>
NRS/Team Lead	Dan Sellers	Archaeologist	Seth Lambert
Supervisor NRS	Casey Freise	Wildlife Biologist	Chris Sheets
Petroleum Engineer	Will Robbie	Geologist	Kerry Aggen
LIE	Karen Klaahsen	Supervisor NRS	Bill Ostheimer
Assistant Field Manager	Clark Bennett	Assistant Field Manager	Chris Durham
NEPA Coordinator	Tom Bills	Wyoming SHPO	Mary Hopkins
Hydrologist	Keith Anderson	Legal Assistant	Connie Modzelewski

**6. References and Authorities**

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