DECISION RECORD
The Daube Company, Jireh Federal 35-13 Alt D
Environmental Assessment (EA), WY-070-EA11-270
Bureau of Land Management, Buffalo Field Office, Wyoming

DECISION. The BLM approves The Daube Company's Jireh Federal 35-13 Alt D oil well application for permit to drill (APD) described in Alternative B of the environmental assessment (EA) WY-070-EA11-270. This approval includes the well's support facilities.

Compliance. This decision complies with or supports:

- Federal Land Policy and Management Act of 1976 (FLPMA) (43 USC 1701); DOI Order 3310.
- Mineral Leasing Act of 1920 (MLA) (30 U.S.C. 181); including the Onshore Oil and Gas Orders.
- National Environmental Policy Act of 1969 (NEPA) (42 USC 4321).
- National Historic Preservation Act of 1966 (NHPA) (16 USC 470).
- Buffalo and Powder River Basin Final Environmental Impact Statements (FEISs), 1985, 2003, 2011.
- Buffalo Resource Management Plan (RMP) 1985 and Amendments.
- Sage-grouse Policy Wyoming BLM February 2012 in Information Memoranda (IM) WY-2012-019; additional policy Washington Office BLM in Information Memoranda (IM) 2010-071.

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

Well Site. BLM approves 1 APD and support facilities:

Well Name & #	Twp	Rng	Sec	Qtr	Lease #
Jireh Federal 35-13 Alt D	53N	70W	2	NENW	WYW175908

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-EA13-11-270, and the FONSI (both incorporated here by reference) found The Daube Company's proposal for Jireh Federal 35-13 Alt D will have no significant impacts on the human environment beyond those described in the PRB FEIS. There is no requirement for an EIS.

COMMENT OR NEW INFORMATION SUMMARY. BLM publically posted the APDs for 30 days, received no comments, and then internally scoped them. BLM received clarified policies on Greater Sage-Grouse (GSG) conservation since receipt of this APD.

DECISION RATIONALE. BLM bases the decision authorizing the selected project on:

1. BLM and The Daube Company included mitigation measures to reduce environmental impacts while meeting the BLM's need. For a complete description of all site-specific COAs, see the COAs.
2. The Daube Company will conduct operations to minimize adverse effects to surface and subsurface resources, prevent unnecessary surface disturbance, and conform to currently available technology and practice.
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 the approved APD, applicable laws, regulations, orders, and notices to lessees.
    - Obtain necessary permits from agencies.
    - Offer water well agreements to the owners of record for permitted wells.

- Incorporate several measures to alleviate resource impacts into their submitted surface use plan and drilling plan.

5. The operator certified it has a surface access agreement.
6. The project is clearly lacking wilderness characteristics as it lacks federally owned surface.
7. This APD is pursuant to the Mineral Leasing Act for developing oil or gas and does not satisfy the categorical exclusion directive of the Energy Policy Act of 2005, Section 390 because the project area does not have recent oil and gas development and is inside the GSG Core Population Area.
8. The impact of this project cumulatively contributes to the potential for local GSG extirpation yet its effect is acceptable because it within the parameters of the Wyoming Sage-grouse Core Population Area Strategy (WY Executive Order 2011-5) and the PRB FEIS/ROD.
   - Daube completed a DDCT (Density Disturbance Calculation Tool) and found existing and proposed disturbance in the analysis area to be 3.10% and disturbance density to be 0.67/640 acres. These totals are below the 5% disturbance and 1/640 density caps set in EO 2011-5 for core areas.
   - A copy of the DDCT, associated maps, and WGFD conformance letter are available in the administrative record at the BLM-BFO.
   - There is an existing improved road within 0.6 miles of the occupied GSG Cow Creek Road 1 and Cow Creek Road 2 Leks - currently authorized and used to access 5 conventional oil wells. An alternate access to the Jireh 35-13 Alt D well was not considered because coordination with the Wyoming Game and Fish Department (WGFD) during the onsite (July 26, 2011) revealed that the WGFD preference was approving the existing road to reduce sagebrush loss. The existing road will not receive substantial improvements and currently receives heavy truck traffic; thus; it is not considered a new surface facility.
   - Occupancy within 0.6 miles of the leks will also be restricted during the GSG breeding season for the project's life. This decision conforms to BLM and Wyoming GSG conservation strategies as it supports the recommendations and population objectives of the WGFD, and incorporates mitigation to reduce impacts to GSG. Compliance with the COAs and operator committed measures should provide protection to the Cow Creek Road Leks during the breeding season. Daube committed to travel the road outside of the hours of 6 p.m. to 8 a.m. from March 15 – May 15 in order to mitigate noise impacts from traffic to breeding GSG.
9. To reduce the likelihood of a "take" under the Migratory Bird Treaty Act, Daube committed to remove BLM sensitive species nesting habitat outside of the breeding season or be cleared by survey.

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. Parties 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: _____ Date: 3/13/14

FINDING OF NO SIGNIFICANT IMPACT
The Daube Company, Jireh Federal 35-13 Alt D
Environmental Assessment (EA), WY-070-EA11-270
Bureau of Land Management, Buffalo Field Office, Wyoming

FINDING OF NO SIGNIFICANT IMPACT (FONSI). Based on the information in the EA, WY-070-, 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 Final Environmental Impact Statement (FEIS) 1985, and the Powder River Basin (PRB) FEIS, 2003, 2011 to which the EA tiers; (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 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 in the 1985 RMP, 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. The proposal may relate to the PRB Greater Sage-Grouse and its habitat decline having cumulative significant impacts; yet the small size of 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, i.e., is amidst mineral development and lacks federally owned surface. 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: _____ Date: 3/13/17

ENVIRONMENTAL ASSESSMENT (EA), WY-070-EA11-270
The Daube Company, Jireh 35-13 Alt D
Bureau of Land Management, Buffalo Field Office, Wyoming

1. INTRODUCTION

BLM provides an EA for The Daube Company's (Daube) Jireh 35-13 Alt D oil well application for permit to drill (APD), incorporated here by reference. BLM's jurisdiction for this proposal is non-federal surface overlying federal minerals, "split-estate" via "public lands" FLPMA, Sec 103(e). 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, 2011, and the PRB FEIS Record of Decision (ROD) per 40 CFR 1508.28 and 1502.21. One may review these documents at the BLM Buffalo Field Office (BFO) and on our website: http://www.blm.gov/wy/st/en/field_offices/Buffalo.html. This APD is pursuant to the Mineral Leasing Act for the purpose of exploring or developing oil or gas and do not satisfy the categorical exclusion directive of the Energy Policy Act of 2005, Section 390 because the project area is inside the Greater Sage-Grouse (GSG) Core Population Area. The surface owner is Larry Shippy.

Congress made a 4-part process for federal fluid mineral decisions under the long-term needs of multiple-use. First is the land use / resource management plan (RMP); here the PRB FEIS and ROD amendment to the BFO RMP. Second are the decisions of whether and, if so, under what conditions, to lease lands for fluid mineral development. Courts held leasing decisions are an almost irrevocable resource commitment. Third, (this phase) is deciding on the proposed APD: the site-specific analysis, and mitigation. Fourth is the monitoring and reclamation of wells and their features. (Pendery 2010)

1.1. Background

Daube proposes drilling and developing 1 oil well into federal mineral estate by directionally drilling 2,242 feet northwest from the surface hole location to the final bottom hole location (BHL), where the wellbore will then turn to vertically penetrate the target Minnelusa formation. The Jireh Federal 35-13 Alt D well location is proposed in the North Gillette GSG Core Area. GSG are managed as a BLM special status (sensitive) species (SSS). BLM Instruction Memorandum WY-2012-019 states that the BLM will manage GSG seasonal and connectivity habitats to support population objectives set by the Wyoming Game and Fish Department (WGFD) and maintain consistency with the Governor's Sage-Grouse Implementation Team's Core Population Area strategy. In 2011, Governor Matt Mead issued Executive Order 2011-5 which outlines this strategy, including the responsibilities of state and federal agencies, as well as the project proponents. New information regarding the status of the GSG elevated its status to a candidate species for potential federal listing as a threatened or endangered species. Additional policy was issued by the Washington Office BLM under Information Memoranda 2010-071.

BLM received this APD on October 12, 2010. A deficiency letter was mailed to the operator on December 8, 2010. Deficiencies were addressed on April 29, 2011. A DDCT (Density Disturbance Calculation Tool) was submitted to WGFD by Grouse Mountain Environmental Consultants (GMC) on May 26, 2011. A revised APD was received by the BLM on July 5, 2011. The pre-approval onsite was conducted on July 26, 2011. Several locations for the proposed wells were explored during and after the onsite. A final revised APD at the well location named Jireh Federal 35-13 Alt D was received on February 4, 2013. A deficiency letter for the Jireh Federal 35-13 Alt D was mailed on March 18, 2013, which included a requirement to revise the previously completed DDCT because of changes to the well location and infrastructure, as well as 2 new GSG leks confirmed in the area. A complete analysis package was provided to the BLM, including a revised DDCT, recommendations from the WGFD for the

project, and additional operator committed measures for GSG conservation on November 21 and December 19, 2013, and on February 24, 2014.

The pre-approval onsite was conducted on July 26, 2011 by the following personnel:

NAME	TITLE	AGENCY	NAME	TITLE	AGENCY
James Marshall	Engineer	Daube	Dale Harris	Lease Operator	Daube
David Shippy	Surface Owner Rep		Debby Green	NRS, lead	BLM
Zach Byram	Biologist	GMC	Bud Stewart	Biologist	WGFD
Darci Stafford	Biologist	BLM	Heather O'Brien	Biologist	WGFD

1.2. Need for the Proposed Project

BLM's need for this project is to determine whether, how, and under what conditions to support the Buffalo Resource Management Plan's (RMP) goals, objectives, and management actions with allowing the exercise of the operator's conditional lease rights to develop fluid minerals on federal leases. Conditional fluid mineral development supports the RMP and 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, 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 APD 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 PRB area received 3 comments, revealing no new issues. The BFO interdisciplinary team (ID team) conducted internal scoping by reviewing the proposal, its location, and a resource (issue) list , Appendix B, to identify potentially significantly affected resources, land uses, resource issues, regulations, and site-specific circumstances not addressed in the tiered analysis or other analyses incorporated by reference. This EA will not discuss resources and land uses that are not present, unlikely to receive significant or material affects, or that the PRB FEIS or other analyses adequately addressed. This EA addresses the project's potentially significant 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. The project area is clearly lacking wilderness characteristics as it is amidst mineral development and lacks federally owned surface. Project issues include:

Air quality
Cultural: National Register eligible sites
Water: ground water, produced water quality & quantity
Soils & vegetation: stability, reclamation potential, riparian & wetlands, invasive species
Wildlife: raptor productivity, migratory birds, special status species

BLM analyzed the following issues in the PRB FEIS and they do not present a substantial environmental question of material significance to this proposal:

Geological resources
Paleontological resources
Cave & karst resources
Mineral resources
Rights-of-way & corridors
Environmental justice
Recreation
Livestock & Grazing
Visual resources
Forest products
Lands & realty
Tribal treaty rights
Wilderness characteristics
Areas of critical environmental concern
Socio-economic resources
Fire, fuels management, & rehab
Transportation & access

2. PROPOSED PROJECT AND ALTERNATIVES

2.1. Alternative A – No Action

The no action alternative would deny this APD requiring the operator to resubmit an APD that complies 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; see Appendix B, below. 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 adjacent and intermingled developments to the proposal area; see Table 3.2.

2.2. Alternative B Proposed Action (Proposal)

Daube proposes drilling and developing 1 vertical oil well into federal mineral estate from a well pad located approximately 2,242 feet from the vertical bore, which will be reached by directional drilling from the surface-hole location.

Table 2.1. Well Name/#/Surface Hole and Bottom Hole Locations (SHL, BHL):

#	Well Name	SHL Qtr	Sec	Twp	Rng	BHL Sec.	Twp	Rng
1	Jireh Federal 35-13 Alt D	NENW	2	53N	70W	35	54N	70W

Overview

The proposed well is 30 miles north of Gillette Wyoming, in Campbell County. The primary objective is to drill to the Minnelusa Formation at 7,525 feet total vertical distance. See Figure 2.1 below for surface disturbance. Several surface locations were evaluated during and after the onsite. Daube proposes drilling and developing 1 oil well into federal mineral estate by directionally drilling 2,242 feet northwest from the surface hole location to the final bottom hole location (BHL), where the wellbore will then turn to vertically penetrate the target Minnelusa formation. The proposed Jireh 35-13 Alt D location depicted in Table 2.1 provides the least amount of disturbance, utilizes existing improved roads, and provides the greatest resource protection.

Drilling, Construction and Production Design Features Include:

- Daube 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.
- The operator anticipates that the well will be completed approximately 30 days after drilling operations have begun.
- A road network consisting of existing improved roads and 834’ of proposed new template road.
- There is existing overhead power (OHP) in the project area. Buried power is proposed for 813’ to existing OHP location.
- Potential production facilities including a pumping unit, Heater-Treater, 2 x 400bbl oil tanks and 1 x 400bbl water tanks 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 a muffler system, decibel level not to exceed 70 decibels at a distance of 200 feet from the exhaust of any muffler.
- The operator plans on using hydraulic fracturing (HF) in the drilling and completion process and will use 10,000bbls of water from Booton Area Water Haul No. P26496.0D located in the SENE of Section 4, T53N, R70W, in Campbell County, Wyoming. It is estimated that between 8 -18 truck trips daily are needed to supply water for drilling and completion.

- The operator will use fresh water based mud for drilling and use a reserve pit lined with a 20 mil synthetic liner, and enclosed on all sides to effectively keep out wildlife and livestock. The reserve pit will be closed within 6 months of well completion.
- Produced hydrocarbons and water will be put in tanks during completion work. Flowback and produced water will be transported by truck to the Holler 1-11 disposal well operated by TCRI operated under DEQ permit #11-308.

For a detailed description of design features and construction practices associated with the proposed project, refer to the surface use plan (SUPO) 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 2.2. Jireh 35-13 Alt D Surface Disturbance

Facility	Construction Disturbance (Short Term)	Interim Disturbance (Long Term)
Engineered Pad w/ Cut & Fill	1 = 2.62 acres	1 = 1.10 acres
New Template Roads	834' x 70' = 1.34 acres	834' x 20' = 0.38 acres
Proposed Pipelines	0	0
Proposed Buried Power	813'x15' = 0.28 acres	0
Overhead Power	Existing, none proposed	Existing, none proposed
Total Acre Disturbance	**4.24 Acres**	**1.48 Acres**

Figure 2.1. Jireh Federal 35-13 Alt D Top & Bottom Hole Locations, Lease Boundaries

Disturbance during construction and drilling will total 4.24 acres, which will be reduced to 1.48 acres during interim reclamation and the production phase of development.

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

- Comply with the approved APD, applicable laws, regulations, orders, and notices to lessees.
- Obtain necessary permits from agencies.
- Offer water well agreements to the owners of record for permitted wells.
- Incorporate measures to alleviate resource impacts in their submitted surface use and drilling plans.
- Certify it has a surface access agreement with the landowners.

2.3. Resource Mitigation and Project Design Features

Daube provided design features and mitigation measures that avoid, reduce, and minimize impacts to specific resources. Resource protection/mitigation design features associated with this project include:

- Daube will conduct all surface disturbing and disruptive activities outside the GSG breeding nesting season (March 15 – June 30) and will keep the removal of sagebrush to a minimum due to the Jireh Federal 35-13 ALT D close proximity to 2 GSG leks. (SUPO, p. 17)
- Daube committed to restricting travel on project access roads to between the hours of 8am - 6pm during the GSG breeding season of March 15 - May 15. (SUPO, p. 17)
- Daube will commit to scheduling maintenance activities that can be scheduled to occur outside of the GSG nesting season of March 15 – June 30 for the life of the project. (SUPO, p. 18)
- Migratory birds will be effectively excluded from all facilities that pose a mortality risk, including, but not limited to, heater treaters, flare stacks, and secondary containment where escape may be difficult or wildlife toxicants are present (BLM IM WY-2013-005). (SUPO, p. 7)
- Daube will conduct all surface disturbing activities outside the migratory bird breeding season (May 1 – July 31), unless a clearance survey has been conducted. (SUPO, p. 7)
- Daube will be responsible for assuring that any open pits that are hazardous to birds and other wildlife will be rendered not accessible to wildlife, and are in compliance with the Migratory Bird Treaty Act (BLM IM WY-2013-005). (SUPO, p. 7)
- Daube will conduct all surface disturbing and disruptive activities outside of the raptor breeding/nesting season (February 1 – July 31) within 0.5 miles of active raptor nests. (SUPO, p. 17).

2.4. Reasonably Foreseeable Activity

Reasonably foreseeable activity, pending confirmation of productivity of this well, includes but is not limited to, production facilities and utilities (power, pipelines), additional wells, either on this pad or adjacent to this pad yet in the analysis area of this APD to develop the Minnelusa Formation .

2.5. 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, 2001, 2003, 2011, and generally conforms to the terms and conditions of that land use plan, its amendments, supporting FEISs, 1985, 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 significantly affected by the alternatives in Section 2, or where changes in circumstances or regulations occurred since adoption of analyses to which the EA tiers or incorporates by reference. 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 adjacent and intermingled developments coincident to proposal area to retain currency in the no action alternative. 615 F. 3d 1122 (9th Cir. 2010). There are 7 producing oil and gas wells in the project area, Wyoming Oil and Gas Conservation Commission (WOGCC) 2013. The total number of conventional wells in the Buffalo planning area is 1,020, which includes 571 horizontal wells (federal, fee, and state) (as of April 2013).This represents 41% of the projected 3,200 in the 2003 PRB ROD. (See Table 2.1 for an approximation of the disturbance in the current situation.) 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. Other operators are likely to continue seeking permits to develop unconnected leases in or in the affects analysis areas near the project area; decisions to approve or deny future proposals will occur following APD submittal. Development occurring on state or private surface over non-federal mineral estate would continue. Within the DDCT boundary, which is 36,043 acres, the project area has about 1,111 acres of surface disturbance from existing roads, well pads, and oil and gas facilities. Approval of the Jireh 35-13 Alt D would add 4.24 acres of disturbance to the existing 1,111acres of disturbance, accounting for approximately 1,116 acres of total disturbance. A summary comparison of the no action alternative (existing disturbance) and the proposal is in Table 3.1 below.

Table 3.1. Summary Comparison of Existing Disturbance and Proposed Action

Category	Acres	Percent
Overall DDCT Boundary	36,043.46	100
Total Disturbed	1,115.84	3.10
Total Undisturbed	34,927.61	96.90
Disturbed - Project Only	4.24	0.01
Disturbed - Prior to Project	1,111.60	3.08
Disruptions	0.67 Dis/640 Ac	

Table 3.2. This EA analysis incorporates by reference the following – either as senior NEPA analysis or as substantially similar analysis in the semi-arid sage-brush, short grass prairie:

#	POD Name	NEPA Document	Well # / Type	Decision Date
1[a]	Mufasa Fed 11-31H Well	WY-070-EA12-062	1 Oil	3/2012
2	Spruce 1 POD	WY-070-CX3-12-95 & -107	2 Oil	5/2012
3[b]	Samson's Hornbuckle Field	WY-060-EA11-1181	48 Oil Well Pads	8/2011
4	Sahara POD	WY-070-EA13-072	21 Oil	3/2013
5	North Cottonwood Creek	WY-070-04-056	NA	12/2003

See also: SDR WY-2013-005, particularly noting pp. 2-3, incorporating the SDR here by reference.

a. Those sections describing and analyzing hydraulic fracturing, its supporting analysis, and the Greater Sage-grouse Section 3.7.12 and 4.8.2.

b. Those sections describing and analyzing hydraulic fracturing and its supporting analysis to include but not limited to traffic, water, and air quality.

The US Geological Survey noted there is only a remote chance of induced seismic activity from the nations hydraulic fracturing and water injection at volumes contemplated in the PRB.

3.1. Air Quality

Wyoming's Department of Environmental Quality (WDEQ) regulates Wyoming's air quality with oversight from the U.S. Environmental Protection Agency (EPA). BLM incorporates by reference the August 2012 Lease Sale EA, WY-070-EA12-44, pp. 17-24 (air quality, greenhouse gas emissions, and visibility); and the 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. The

EPA established ozone standards in 2011 and oil and gas new source performance standards in 2012, 77 FR 49490. Existing air quality in the PRB is "unclassified/attainment" for 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 1 of the nation's 40 "nonattainment" zones for ozone in 2012; in addition to PRB-area air quality alerts issued in 2011 - 2013 for particulate matter (PM), attributed to coal dust. Four sites monitor the air quality in the PRB: Cloud Peak in the Big Horn 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 6 sites, and particulate concentrations from 5 of those sites, monitors speciated aerosol (3 locations), and evapotranspiration rates (3 locations). These sites are at Sheridan, Taylor Reservoir, South Coal Reservoir, Buffalo, Juniper, and Newcastle. The northeast Wyoming visibility study is ongoing by the 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.

Existing air pollutant emission sources in the region include:

- Exhaust emissions (primarily carbon monoxide (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;
- 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
- Sulfur dioxide (SO2) and NOx from power plants.

3.2. Soils, Ecological Sites, and Vegetation

Within the PRB's Northern Rolling High Plains-Southern Part major land resource area (USDA Handbook 296, 2006) are numerous ecological sites - a distinctive kind of land with specific characteristics differing from other kinds of land in its ability to produce a distinctive kind and amount of vegetation. Different soil compositions support an ecological site. BLM obtained detailed soils identification and data for the project area from the North Campbell County Survey Area, Wyoming Soil Survey Geographic (SSURGO) Database (WY250). The Natural Resource Conservation Service (NRCS) performed the soil survey according to National Cooperative Soil Survey standards. The BLM uses county soil survey information to predict soil behavior, limitations, or suitability for a given proposal.

BLM tabulated a summary of each well or feature with soil attributes leading to increased concern for long term soil conservation. SSURGO data review identified site specific sensitive soils that did not receive site specific analysis in the PRB FEIS. Project issues related to soils and vegetation are further refined to address: soils susceptible to severe erosion, Limited Reclamation Potential (LRP) areas (miscellaneous areas, slopes in excess of 25%, erosion, or compliance with WY BLM's reclamation policy (http://www.blm.gov/style/medialib/blm/wy/programs/reclamation.Par.60413.File.dat/wy2012-032w-atch.pdf). The Map Unit for soils at the proposed well site and access road is Vonalf-Xema-Mittenbutte, comprised of fine sand loams, with a slope that varies between 3-30%, see Table 3.3 below.

Table 3.3. Dominant Soils by Map Unit Symbol (MUS) and Map Unit Name

Well Location	MUS	Map Unit Name	Ecological Site
Jireh Federal 35-13 Alt D & Proposed Access	334	Vonalf-Xema-Mittenbutte fine sandy loams, 3-30% slopes	Sandy 15-17" Northern PI

NOTE: area of analysis includes access (proposed, new disturbance) to well location

The Jireh Federal 35-13 Alt D well location is on top of a sandy ridge near the crest of the hill. Slopes at

the site average 4-5%. Soils are shallow sands with a hardpan sandstone layer at 5" present in spots. Soil stabilization techniques will reduce soil loss during construction, drilling, and production. The use of relief culverts installed along the proposed access will reduce water velocity and reduce erosion. The project area has fair reclamation potential due to the presence of sandy soils. The Historic Climax Plant Community (HCPC) is a Needleandthread/Prairie Sandreed Plant Community. Major vegetative species at this location include Prairie Sandreed, blue grama, threadleaf sedge, needleandthread, fringed sage, and prickly pear cactus. Big sagebrush and silver sagebrush are located on the western edge of the pad. Combined sagebrush canopy cover is 10 to 12%, with an average height of 26-28 inches.

3.3. Water Resources

WDEQ regulates Wyoming's water quality with EPA oversight. 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 WOGCC has authority for permitting and bonding off channel pits located over state and fee minerals.

3.3.1. Groundwater

The areas historical use of groundwater was for stock or domestic water. There are 13 oil and gas wells and 2 water injection wells (WIW) in the area. A search of the WSEO Ground Water Rights Database showed 3 registered stock and domestic water wells within ½ mile of the proposed well with depths from 700 to 730 feet. Refer to the PRB FEIS for information on groundwater, pp. 3-1 to 3-36. The 2004 EPA study found it unlikely that HF CBNG wells would contaminate ground water. The EPA has an on-going study looking at more aspects of HF and has yet to issue findings. A 2011-2012 Geological Survey study found no groundwater effects from thousands of deep horizontally fractured oil and gas wells. Another study found no direct link between HF and studied aquifers, Warner, 2012. The Fox Hills, the deepest penetrated fresh water zone in the PRB lies well above the target formation at 1,720 feet.

3.3.2. Surface Water

The project area is bound by the Spring Creek drainages to the north and east. The construction of the proposed location should not directly impact these drainages. Most of the area drainages are ephemeral (flowing only in response to a precipitation event or snow melt) to intermittent (flowing only at certain times of the year when it receives water from alluvial groundwater, springs, or other surface source – PRB FEIS, Glossary). The channels are primarily well vegetated grassy swales, without defined bed and bank. See generally the PRB FEIS, pp. 3-48 to 3-49 for more information.

3.4. Invasive or Noxious Species

The BLM's weed database showed the presence of Leafy Spurge, Russian Knapweed, and Whitetop in project area. At the onsite, Common Cocklebur (Xanthium strumarium) was noted in the project area. 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 high densities and numerous locations in NE Wyoming. Gelbhard, 2003 and Duniway 2010, showed that surface disturbances increase the proliferation of invasive or noxious species out to 0.5 miles or more from the disturbance while correspondingly compromising native communities in the same footprint. Cheatgrass (*Bromus tectorum*) and to a lesser extent, Japanese brome (*B. japonicus*) exist in the area. These species are found in high densities and numerous locations in NE Wyoming. Balch, 2013, linked the proliferation of cheatgrass in semi-arid environments to the increased frequency and severity of wildfire.

3.5. Fish and 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 July 26, 2011. 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 any species not discussed in detail below are in Appendix B and the AR.

3.5.1. Threatened, Endangered, Candidate, Special Status (Sensitive) Species

The Buffalo BLM receives a species list periodically from the FWS of threatened, endangered, proposed, and candidate species. Species on that list that would be impacted by the proposal are discussed below.

3.5.1.1. Ute Ladies'-Tresses Orchid (ULT)

The FWS lists the Ute ladies'-tresses orchid (ULT) as threatened. The PRB FEIS discussed the affected environment for ULT, p. 3-175, which BLM incorporates here by reference. The project area does not contain suitable habitat for the ULT, and the species is not expected to occur.

3.5.1.2. Northern Long-Eared Bat

The Northern long-eared bat (*Myotis septentrionalis*) was proposed for listing under the ESA by the FWS, October 2, 2013; 78 FR 61046. FWS determined that the northern long-eared bat is in danger of extinction, predominantly due to the threat of white-nose syndrome. However, other threats (the present or threatened destruction, modification, or curtailment of its habitat or range; overuse for commercial, recreational, scientific, or educational purposes; other natural or manmade factors affecting its continued existence) when combined with white-nose syndrome heighten the risk to the species (FWS 2013c). The northern long-eared bat ranges across much of the eastern and north central United States, and all Canadian provinces west to the southern Yukon Territory and eastern British Columbia (FWS 2013c). The species is known to occur in northeastern Wyoming and is documented in Campbell, Crook, and Weston counties; however, population information is limited and the species is considered uncommon or rare outside of the Black Hills in Wyoming (FWS 2013c). Northern long-eared bats emerge at dusk to fly through the understory of forested hillsides and ridges feeding on moths, flies, leafhoppers, caddisflies, and beetles, which they catch in flight using echolocation, or by gleaning (picking) from vegetation. In the summer, male and reproductive female bats roost singly or in colonies in cracks, crevices, cavities, and under the bark of live and dead trees, while other males and non-reproductive females roost in cooler places like caves and mines (FWS 2013b, Adams 2003). Suitable roosting or foraging habitat for Northern long-eared bat is not present where surface disturbance is proposed. There is no forested habitat located at the well site, or within 1.5 miles of the proposal. The species is not expected to forage in the project area based on typical home range sizes and foraging characteristics.

3.5.1.3. Greater Sage-Grouse (GSG)

The PRB FEIS has a detailed discussion on GSG ecology and habitat, pp. 3-194 to 3-199. Subsequently the FWS determined the 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 special status (sensitive) species (SSS) and a WGFD species of greatest conservation need because of population decline and ongoing habitat loss. The 2012 population viability analysis for the Northeast Wyoming GSG 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.

Impacts to GSG from energy development are documented at various scales. The State Wildlife Agencies' Ad Hoc Committee for Consideration of Oil and Gas Development Effects to Nesting Habitat (2008) implicates that impacts to leks occur within 4 miles of oil and gas developments, and recommends development at a scale of one well per square mile. In its *Recommendations for Development of Oil and*

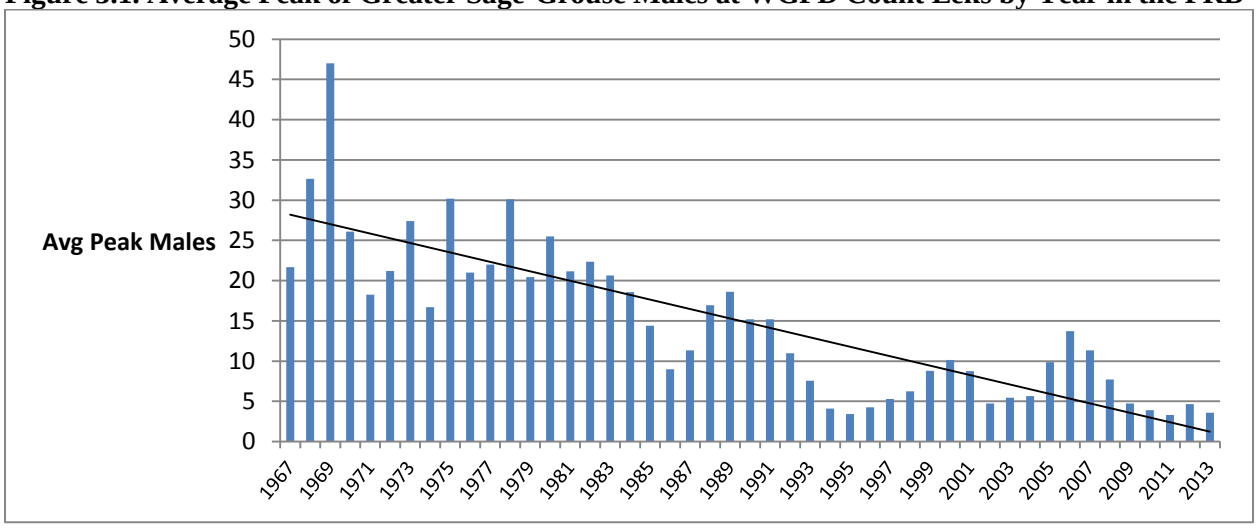
Gas Resources within Important Wildlife Habitats (2009), WGFD categorized impacts to GSG by number of well pad locations per square mile within 2 miles of a lek and within identified nesting/brood-rearing habitats greater than 2 miles from a lek. The State Wildlife Agencies' Ad Hoc Committee for Consideration of Oil and Gas Development Effects to Nesting Habitat (2008) implicates that impacts to leks occur within 4 miles of oil and gas developments. Impacts from oil and gas development are discernible at the spatial scale of 20 km (12.4 mi) (Taylor et al. 2012). WGFD records show that 4 GSG leks occur within 4 miles of the project area; see Table 3.4, below. The GSG population in northeast Wyoming is exhibiting a steady long term downward trend, as measured by lek attendance (WGFD 2013b). Figure 3.1 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 (USFWS 2010, Taylor et. al. 2012).

Table 3.4. WGFD Category of Impact for Greater Sage-Grouse Leks in the Project Area

Lek Name[1]	Distance to Project (miles)	Number of Permitted and Producing Wells[1]		Density of Permitted Producing Wells (wells per square mile)		WGFD Category of Impact
		2-mile buffer	*4-mile buffer*	*2-mile buffer*	*4-mile buffer*	
Cow Creek Road 1	0.6	22	58	1.8	1.2	Moderate
Cow Creek Road 2	1	27	55	2.2	1.1	High
Mitchell	4	5	28	0.4	0.6	Low
York	1.7	5	57	0.4	1.1	Low

[1] Lek locations obtained from BLM 2012b. The locations of permitted and producing oil and gas wells were obtained from the WOGCC online database (WOGCC 2012b).

Figure 3.1. Average Peak of Greater Sage-Grouse Males at WGFD Count Leks by Year in the PRB



Site Specific Habitat

The project area is in the North Gillette core habitat area, as identified in EO 2011-5. GSG habitat models show that the project area contains high quality GSG nesting and winter habitat (Walker et al. 2007). BLM confirmed sagebrush shrublands provide suitable nesting, brood rearing, and winter habitat in the project area. Four leks are present within 4 miles of the proposed infrastructure. The Cow Creek Road 1 and 2 Leks were discovered in 2011 during initial wildlife protocol surveys for the project.

3.5.2. Special Status (Sensitive) Species (SSS)

The PRB FEIS discussed the affected environment for SSS, p. 3-174 to 201. The authority for the SSS comes from the ESA, as amended; Title II of the Sikes Act, as amended; the FLPMA; Department

Manual 235.1.1A and BLM Manual 6840. Appendix B, Table B.3 lists those SSS that may occur in the project area. The Table also includes a brief description of the habitat requirements for each species. Wyoming BLM annually updates its list of SSS to focus management to maintain habitats to preclude listing as a threatened or endangered species. The policy goals are:

- Maintaining vulnerable species and habitat components in functional BLM ecosystems;
- Ensuring sensitive species are considered in land management decisions;
- Preventing a need for species listing under the Endangered Species Act (ESA); and
- Prioritizing needed conservation work with an emphasis on habitat.

Wyoming BLM updates SSS on its website: http://www.blm.gov/wy/st/en/programs/Wildlife.html. BLM discusses those SSS impacted beyond the level analyzed in the PRB FEIS, below. Brewer's sparrow, loggerhead shrike, and sage sparrow are discussed under Migratory Birds (Section 3.6.5).

3.5.3. Big Game

The big game species occurring in the project area are mule deer and pronghorn. Sagebrush grasslands in the area provide habitat for forage and cover. Both species are expected to use the area year-round, with higher concentrations of mule deer during winter months. The PRB FEIS discussed the affected environment for pronghorn and mule deer, on pp. 3-117 to 3-122 and pp. 3-127 to 3-132, respectively. Table 3.5, below, indicates the delineated seasonal ranges for each species that occur in the project area, the herd units affected by the project, the WGFD population objective, and the WGFD current population estimate for each species (WGFD 2013). Both herd units are estimated below population objectives. The WGFD identified main potential causes to be weather factors and low fawn recruitment (WGFD).

Table 3.5. Big Game Species, Seasonal Ranges, Herd Units, Population Objectives, and Population Estimates for Big Game Species Likely to Occur in the Jireh 35-13 Alt D Project Area

Species	Seasonal Range in Project Area	Herd Unit	WGFD Population Objective	% Above (+) or Below (-) Objective	WGFD Report Year
Mule Deer	Winter yearlong	319 – Powder River	52,000	- 32.1%	2012
Pronghorn	Yearlong	339 – N. Black Hills	14,000	- 10.9%	2012

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. The mosaic of grasslands and sagebrush shrublands that occur in the project area may provide nesting and brood-rearing habitat. The nearest known plains sharp-tailed grouse lek is approximately 2.5 miles north of the project area. No plains sharp-tailed grouse were noted in the project area (GMEC 2013).

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, consultants identified 2 raptor nest sites within 0.5 miles of the project boundary (GMEC 2013). These nests are in Table 3.6, below. 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.

Table 3.6. Nests Within 0.5 Miles of the Jireh 35-13 Alt D Project Area.

BLM ID	Year	Species	Status
12607	2011	Red-tailed Hawk	Active
	2012	Great Horned Owl	Active
	2013	n/a	Inactive

BLM ID	Year	Species	Status
13361	2012	Red-tailed Hawk	Active
	2013	Red-tailed Hawk	Active

3.5.6. Migratory Birds

The PRB FEIS discussed the affected environment for migratory birds, pp. 3-150 to 3-153. A wide variety of migratory birds may occur in the proposed project area at some point during the year. Migratory birds are birds that migrate for breeding and foraging during the year. The BLM-Fish and Wildlife Service (FWS) Memorandum of Understanding (MOU) (2010) promotes the conservation of migratory birds, complying with Executive Order 13186 (Federal Register V. 66, No. 11). BLM encourages voluntary design features and conservation measures supporting migratory bird conservation, in addition to appropriate restrictions.

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). Nationally, grassland and shrubland birds declined more consistently than any other ecological association of birds over the last 30 years (WGFD 2009). The FWS's Birds of Conservation Concern (BCC 2008) report identifies species of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act. Species in this list that have the potential to nest or forage in the project area are: bald eagle, ferruginous hawk, golden eagle, prairie falcon, mountain plover, upland sandpiper, long-billed curlew, burrowing owl, short-eared owl, loggerhead shrike, sage thrasher, Brewer's sparrow, sage sparrow, grasshopper sparrow, and McCown's longspur. Several migratory species are also BLM special status (sensitive) species (SSS). Those known or suspected of occurring in the project area include Brewer's sparrow, ferruginous hawk, loggerhead shrike, long-billed curlew, mountain plover, sage sparrow, sage thrasher, and western burrowing owl.

3.6. Cultural Resources

A class III cultural resource inventory was performed for the Jireh 35-13well prior to on-the-ground project work (BFO project no. 70110007). A Class III cultural resource inventory following the Archeology and Historic Preservation, Secretary of the Interior's Standards and Guidelines (48CFR190) and the *Wyoming State Historic Preservation Office Format, Guidelines, and Standards for Class II and III Reports* was provided to BFO by Daube. Seth Lambert, BLM Archaeologist, reviewed the report for technical adequacy and compliance with BLM standards, and determined it to be adequate. No cultural resources are located in the proposal 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 projects, their approval, and construction. BLM incorporates by reference these analyses in this EA; see Table 3.2. This updated the no action alternative and cumulative effects. Within the DDCT boundary, which is 36,043 acres, the project area has about 1,116 acres of surface disturbance from existing roads, well pads, and oil and gas facilities. Approval of the Jireh 35-13 Alt D would add 4.24 acres of disturbance to the existing 1,116 acres of disturbance. Under the no action alternative, on-going well field operations would continue as would the development of oil and gas on over private and state surface and minerals. If future development activities over federal mineral leases are proposed, BLM will conduct a site-specific proposal review and potential disturbance using the GSG habitat boundaries (Wyoming Governor's Greater Sage-grouse Core Areas). 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

In the project area, 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 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. 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, tribal, or federal air quality standards and this project is well within the projected development parameters.

4.2. Soils, Ecological Sites, and Vegetation

4.2.1. Direct and Indirect Effects

The PRB FEIS identified development impacts common to most disturbances, pp. 4-134 to 150. Proposed and existing, pads, roads, and culverts are shown on the MSUP and the WMP maps (see the AR). These structures would be built per industry and BLM standards. BLM defined the designation of the duration of disturbance in the PRB FEIS (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”. The effects to soils and vegetation, resulting from proposed access road, well pad construction and existing access roads that require improvements include:

-Mixing of horizons – occurs where construction on roads 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 re-vegetation. 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. With expedient reclamation, productivity and stability should be regained in the shortest time frame.

-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. Compaction may be remediated by plowing or ripping.

-Modification of hill slope hydrology - 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 predominantly composed of cyanobacteria, green and brown algae, mosses and lichens. They 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.

These impacts, singly or cumulatively, would increase the potential for soil 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. Direct effects (removal and/or compaction) to vegetation would occur from ground disturbance caused by drilling rig equipment and construction of a well pads, tank batteries and roads. Short term effects would occur where vegetated areas are disturbed but later reclaimed within 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 may result in loss of vegetation and affect reclamation success for the life of the project.

The proposal would impact the area plant communities and the transition between the communities. Other impacts anticipated occurring include those in the direct and indirect effects, listed above under soils section. Direct effects to ecological sites would occur from ground disturbance caused by construction of well pads, ancillary facilities, associated pipelines, and roads. Short term effects would occur where vegetated areas are disturbed but later reclaimed within 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 life of the project.

4.2.2. Cumulative Effects

For details on expected cumulative impacts, refer to the PRB FEIS, pp. 4-151 to 4-172. Most soil disturbances would be short term impacts with expedient interim reclamation and site stabilization. These impacts, singly or in combination, could increase the potential for valuable soil 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, if applicable mitigation measures are not used. Cumulative effects to ecological sites include the further alteration of disturbance regimes from the increased disturbance and noxious weeds, and alterations in vegetation community's diversity and cover.

4.2.3. Mitigation Measures

Refer to the surface use plan (SUP), Reclamation Plan, and the APDs for pad design drawings and a detailed description of design features, operator committed measures and construction practices. Culverts will be at the appropriate locations for streams and channels crossed by roads specified in the BLM Manual 9112, Bridges and Major Culverts and Manual 9113, Roads. Streams will be perpendicular to flow, where possible, and all design of stream crossing structures will carry the 25-year discharge event or other capacities as directed by the BLM. BLM will apply COAs that access roads used for the well be fully built prior to drilling the well; that cut and fill slopes of the pad have erosion control methods applied; and that developed seed mixes, or the landowner's seed desires are used for reclamation – to minimize erosion and maximize later reclamation.

4.2.4. Residual Effects

Residual effects across the project would include a long-term loss of soil productivity associated with well pads and roads. The PRB FEIS identified residual effects (p. 4-408) such as the loss of vegetative cover, despite expedient reclamation, for several years until reclamation is successfully established. In spite of the above residual effects, the BLM considers that Alternative B with is within the parameters for surface disturbance and surface disturbance reclamation in PRB FEIS ROD**.** Residual effects were also identified in the PRB FEIS, p. 4-408 such as the loss of vegetative cover, despite expedient reclamation, for several years until reclamation is successfully established. The alteration of biodiversity of ecological sites could result from disturbance, alterations in vegetation in reclaimed areas, and the spread and establishment of weed species. BLM developed a site specific seed mix for the proposed disturbance area. BLM can only require their use on BLM surface. The seed mix selected on private land is selected by the surface owner and may be designed to be more beneficial to cattle grazing than to soil stabilization. The result may be long term wind and water erosion on the fine sandy loam soils with little or no re-vegetation success. The BLM considers these residual effects from Alternative B with proposed well Jireh Federal

35-13 Alt D well are within the parameters for acceptable surface disturbance and surface disturbance reclamation in PRB FEIS ROD and Onshore Oil and Gas Order Number 1.

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 an adverse impact on ground water. The volume of water produced by this federal mineral development is unknowable at the time of permitting.

Daube will have to produce the well for a time to be able to estimate the volume and quantity of water production. To comply with Onshore Order Oil and Gas Order No. 7, Disposal of Produced Water, Daube will submit a Sundry to the BLM within 90 days of first production which includes a representative water analysis and the final proposal for water management. The quality of water produced in association with conventional oil and gas historically was such that surface discharge would not be possible without treatment. Initial water production is quite low in most cases. There are 3 common alternatives for water management: re-injection, deep disposal, or disposal into pits. All alternatives would be protective of groundwater resources when performed in compliance with state and federal regulations.

4.3.1. Groundwater

4.3.1.1. Direct and Indirect Effects

Daube will use fresh water based mud for drilling and utilize a reserve pit lined with a 20 mil synthetic liner, and enclosed on all sides to effectively keep out wildlife and livestock. The reserve pit will be closed within 6 months of well completion. Produced hydrocarbons and water will be put in tanks during completion work. Flowback and produced water will be transported by truck to the Holler 1-11 disposal well operated by TCRI operated under DEQ permit #11-308. The operator will run surface casing to at least 1,200 feet. This is to protect any of the shallow groundwater fresh aquifers. BLM asserts the EPA and USGS studies showing the lack of effects of HF drilling practices have on ground water are applicable here as there is an absence of evidence to the contrary.

The Fox Hills, the deepest penetrated fresh water zone in the PRB lies well above the target formation at 1,720 feet. The target formation for the Jireh Federal 35-13 Alt D is the Minnelusa Formation at 7,525 feet. All potential hydrocarbon zones will be cemented off with cement lifted to 5,600 feet. The operator will verify that there is competent cement across the aquifer, from 100 feet above to 100 feet below the Fox Hills Formation. This will ensure that ground water will not be adversely impacted by well drilling and completion operations. Additionally the cumulative industry and regulatory experience shows that thousands of wells pierce the nation's largest aquifer in western Texas, Oklahoma, and Kansas with essentially no direct or indirect impact to that groundwater, see, http://www.spe.org/jpt/print/archives/2010/12/10Hydraulic.pdf.

4.3.1.2. Cumulative Effects

BLM foresees minimal cumulative effects either to or from the use of ground water for the proposed well. BLM anticipates no need for mitigation measures beyond the design features and programmatic COAs. BLM anticipates no residual effects to ground water from this project.

4.3.1.3. Mitigation Measures

The APD's surface use and drilling plans show adequate protection of surface lands and ground water, including the Fox Hills Formation. 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 any fresh water aquifers above the target coal zone. This will ensure that ground water will not be adversely impacted by well drilling and completion operations.

4.3.1.4. Residual Effects

BLM anticipates no residual effects.

4.4. Invasive Species

4.4.1. Direct and Indirect Effects

The operator 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. Cheatgrass (*Bromus tectorum*) and to a lesser extent, Japanese brome (*B. japonicus*) exist in the area. 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

The Daube Company submitted applicant committed measures in the SUP to identify, reduce opportunities to spread, and treat infestation of noxious weeds and invasive plants, listed in the Jireh 35-13 Alt D Weed Control Program, will reduce potential impacts from these species. 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.

4.4.4. Residual Effects

Daube control efforts are limited to the surface disturbance associated the project's implementation. Cheat grass 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. Fish and Wildlife

4.5.1. Wildlife Threatened, Endangered, Proposed and Candidate Species

4.5.1.1. Threatened and Endangered Species

Suitable habitat for ULT is not present in the foreseeable activity and project area. Suitable roosting habitat for Northern long-eared bat (proposed for listing) is not present in the project area, and individuals are not expected to forage in the project area based on typical home range sizes and foraging characteristics. Implementation of the proposed project will have "no effect" on either species.

4.5.1.2. Greater Sage-Grouse

4.5.1.2.1. 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 (*Centrocercus urophasianus*) 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).

Construction of the well and the associated infrastructure will cause fragmentation of sagebrush stands and result in the direct loss of approximately 3.87 acres of GSG habitat. Noise and human disturbance associated with roads, construction, drilling, and completion will be disruptive to GSG. Daube describes activities that will occur during drilling and completion of proposed wells in its SUPO and drilling plan for the Jireh Fed 35-13 Alt D DIR well. Daube estimates that drilling will last approximately 10 days, with completion taking an additional 10 days. It's estimated that 10,000 bbls of water will be used for completion, which will be trucked onto the site. Completion, including staging and stimulation activities, may last up to a week based on estimates given in previously approved projects within the BLM-BFO. 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 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*. IM 2012-019 states that for areas inside of core 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."

Daube contracted GMEC to conduct a DDCT analysis under the requirements of Wyoming EO 2011-5. The DDCT determined the level of existing surface disturbance and disturbance density in a pre-defined analysis area (4 mile buffer of leks within 4 miles of the Jireh Fed 35-13 Alt D DIR, within the core area boundaries). Both the disturbance density (0.67/640) and surface disturbance (3.10%) levels were found to be in compliance with EO 2011-5 stipulations, as determined by WGFD (letter dated December 19, 2013). See the AR for the DDCT, associated maps, and WGFD conformance letter.

The main access road into the project area occurs within approximately 90 feet of the Cow Creek Road 1 Lek, and 550 feet (0.1 miles) of the Cow Creek Road 2 Lek, well within the 0.25 miles CSU included in the RMP for occupied or undetermined leks. WY BLM IM 2012-019 advises that surface occupancy should not occur within 0.6 miles of occupied leks within the core area. Currently, the road is the main access to 3 fee, and 2 federal producing oil wells. Construction of a new road outside the CSU/NSO was not considered because of the existing development in the area currently using the road and the importance of maintaining intact sagebrush habitat. The WGFD attended the July onsite, as was involved throughout the proposal's design modification and approval. It is clear from their recommendations (July 27, 2011), that minimizing habitat loss was of high importance, and that siting of "new" facilities should be outside the 0.6 mile NSO outlined in EO 2011-5. Building a new road through suitable nesting habitat is likely to be more detrimental to GSG in the area than using the existing road. WGFD recommended (December 19, 2013) that Daube restrict travel on the road to 8:00 am – 6:00 pm during the breeding season (March 15 – May 15) to reduce noise impacts at the leks from traffic on the road.

Continued use of the access road may cause GSG to abandon the Cow Creek Road 1 and 2 Leks due to traffic during the breeding and nesting season. Approval of the Jireh Fed 35-13 Alt D well would increase traffic on the road. Daube indicated in their SUPO, that if the well becomes a producer, at least 1 pickup truck will visit the site daily, SUPO, p. 5; and it is reasonably assumed that large semi-trucks would also haul product from the site every couple days. Noise from the use of the access road is likely to disrupt breeding behavior of GSG using the lek by interfering with the ability to hear vocalizations, increasing stress to individuals, and causing changes in strutting patterns, and avoidance of the lek (Patricelli et al. 2012, Blickley et al. 2012, Blickley and Patricelli 2012). Studies show that intermittent noise (such as that associated with traffic) can have a greater impact on GSG than continuous drilling noise, and causes immediate reduction in attendance at leks (Blickley et al. 2012). Light vehicular traffic (1–12 vehicles per

day) is shown to substantially reduce nest initiation rates and increase the distance of nests from lek sites (Lyon and Anderson 2003). Holloran (2005) found that traffic on roads within 0.8 miles of a lek during the early morning while males are strutting is related to declines in male attendance. Daube has committed to only travel the road from the hours of 8 a.m. to 6 p.m. during the breeding season (March 15 – May 15). This timing limitation will alleviate impacts to grouse attending leks, but will not reduce impacts to grouse that may be nesting or roosting near roads in the project area. Even with a timing limitation on travel near the lek during the breeding season, GSG may avoid the Cow Creek Road 1 and 2 Leks and surrounding nesting habitat, and eventually abandon the area due to existing area traffic.

Research identified reductions in road and well pad construction, vehicle traffic, industrial noise (Lyon and Anderson 2003; Holloran 2005), and the management of produced water to prevent the spread of mosquitoes with the potential to vector West Nile virus in GSG habitat (Walker et al. 2007), as effective strategies to reduce impacts on GSG. The BLM biologist recommends that surface disturbing and disruptive activities occur outside of the breeding/nesting season (March 15 – June 30) in order to be in compliance with WY BLM policy or the State of Wyoming's Greater Sage-Grouse conservation strategy (Executive Order (EO) 2011-5 Greater Sage-grouse Core Area Protection). During onsite visits, the BLM and WGFD made specific recommendations to avoid placement of facilities in sagebrush to reduce direct loss of GSG habitat. This included recommendations to consolidate infrastructure where feasible. The BLM and WGFD also made recommendations for mitigation measures to ensure compliance with EO 2011-5. Daube accepted the majority of recommendations and has incorporated them into their SUPO as operator committed measures. Daube's operator committed measures that reduce impacts to GSG are:

- Daube will conduct all surface disturbing and disruptive activities outside the GSG breeding nesting season (March 15 – June 30) and will keep the removal of sagebrush to a minimum. (SUPO, p. 17)
- All engines will have an operational muffler system. The decibel level will not exceed seventy (70) decibels at a distance of 200 feet from the exhaust of any muffler. (SUPO, p. 7)
- Electric lines will be buried.
- The reclamation seed mix contains 2 native grasses (at least 1 bunchgrass) and 2 native forb species, which is consistent with the general stipulations of EO 2011-5. (Reclamation Plan, p. 19)
- Daube will continue to monitor leks in the project area. (SUPO, p. 17)
- Travel on the project access roads will be restricted to the hours of 8am - 6pm during the GSG breeding season (March 15 - May 15) in order to reduce impacts to the Cow Creek Leks from noise and vehicle traffic. (SUPO, p. 17)
- Routine maintenance activities will be scheduled outside of the nesting season (March 15 - June 30) when possible. (SUPO, p. 18)

4.5.1.2.2. 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)." Based on the impacts described in the PRB FEIS and the findings of recent research, the proposal may contribute to a decline in male attendance at the 4 leks that occur within 4 miles of this proposal, and, potentially, extirpation of the local GSG population.

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.).

The Buffalo Resource Management Plan (BLM 2001) and the PRB FEIS Record of Decision (BLM 2003) included a 2-mile timing limitation on surface-disturbing activities around GSG leks. The 2-mile measure originated with the Western Association of Fish and Wildlife Agencies (WAFWA) (BLM 2004). Wyoming BLM adopted the 2-mile recommendation in 1990 (BLM 1990). The 2-mile recommendation was based on early research which indicated between 59% and 87% of GSG nests were located within 2 miles of a lek (BLM 2004). These studies were conducted in vast contiguous stands of sagebrush, such as those that occur in Idaho's Snake River plain.

Additional research across more of the GSG's range has since indicated that nesting may occur much farther than 2 miles from the breeding lek (BLM 2004). Holloran and Anderson (2005), in their Upper Green River Basin study area, reported that only 45% of their GSG hens nested within 1.9 miles of the capture lek. Moynahan and Lindberg (2004) found that only 36% of their GSG hens nested within 1.9 miles of the capture lek. Habitat conditions, and, thus, GSG biology, in the PRB area are more similar to Moynahan's north-central Montana study area than the Upper Green River area. Moynahan's study area occurred in mixed-grass prairie and sagebrush steppe, dominated by Wyoming big sagebrush (Moynahan et al. 2007). Recent research in the PRB suggests that impacts to leks from energy development are discernible out to a minimum of 4 miles, and that some leks in this radius have been extirpated as a direct result of energy development (Walker et al. 2007, Walker 2008, Naugle et al. 2011). BLM determined, based on these studies, that a 2-mile timing limitation is insufficient to reverse the population decline.

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 and associated lease stipulations, conditions of approval, and best management practices (BMPs), may not be sufficient to protect the population viability of PRB GSG.

Based on the summary of research describing the impacts of energy development on GSG, efforts to reduce habitat loss and fragmentation are likely to be the most effective in ensuring long-term lek persistence. Rather than limiting mitigation to only timing restrictions, more effective mitigation strategies may include, at a minimum, burying power lines (Connelly et al. 2000b); minimizing road and well pad construction, vehicle traffic, and industrial noise (Lyon and Anderson 2003, Holloran 2005); managing produced water to prevent the spread of mosquitoes with the potential to vector WNv in GSG habitat maintaining extensive stands of sagebrush habitat over large areas (at least 1 mile in size) around leks (Walker et al 2007); locating energy facilities at least 2 miles from active leks Connelly et al. (2000).

The 2012 population viability analysis for the NE Wyoming GSG found there remains a viable population of GSG in the PRB (Taylor et al. 2012). Threats from energy development and West Nile Virus (WNv) are impacting future viability (Taylor et al. 2012). The study indicated that effects from energy development, as measured by male lek attendance, are discernible out to a distance of 12.4 miles.

Studies document 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 CBNG development and WNv in the PRB area will continue to impact the local GSG population, causing further declines in lek attendance, and could result in local extirpation: "[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).

Current well densities reduce the effectiveness of PRB core areas (Taylor et al. 2012). Continued energy development around the core areas will reduce PRB core areas remaining 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. Results suggest that if current oil and gas development rates continue, they may compromise future viability of NE Wyoming GSG, with an increased chance of extirpation with additional WNv outbreaks (Taylor et al. 2012).

4.5.1.2.3. Mitigation Measures

No mitigation beyond the operator committed measures is proposed with alternative B.

4.5.1.2.4. Residual Effects

A timing limitation restricting surface disturbance and disruptive activities 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.

The PRB FEIS predicted that the PRB oil and gas development would have significant impacts to the GSG population. The impact of the proposed project development cumulatively contributes to the potential for local GSG extirpation. Alternative B is consistent with current BLM and Wyoming GSG conservation strategies and the anticipated effects are within the parameters of the PRB FEIS/ROD.

4.5.2. Special Status (Sensitive) Species (SSS)

The PRB FEIS discusses impacts to SSS on pp. 4-257 to 4-265. The effects to sensitive species resulting from implementation of the project are available in the AR. Brewer's sparrow, loggerhead shrike, sage thrasher, and sage sparrow are addressed under migratory birds (Section 4.6.3).

4.5.3. Big Game

4.5.3.1. 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. Effects to big game from surface disturbing and disruptive activities associated with development of oil wells were analyzed in the Simba Fed 20-44H EA, WY-070-EA12-061, 2012, Section 4.9.4, pp. 17-18, and in the Sahara POD EA, WY-070-EA13-72, 2013, Section 4.6.1, pp. 27-38, all incorporated here by reference. Activities associated with this proposal are anticipated to be similar in nature, with the additional site-specific information. Mule deer and pronghorn would be directly disturbed with the construction of the proposal. Long term disturbance would be direct habitat loss. Short-term disturbances also result in direct habitat loss of approximately 4 acres of sagebrush habitat; however, they should provide some habitat value as these areas are reclaimed and native vegetation becomes established.

4.5.3.2. Cumulative Effects

The cumulative effects associated with Alternative B are within the analysis parameters and impacts described in the PRB FEIS, p. 4-181 to 4-215.

4.5.3.3. Mitigation Measures

No mitigation is proposed with Alternative B.

4.5.3.4. Residual Effects

No residual impacts are anticipated.

4.5.4. Migratory Birds

4.5.4.1. Direct and Indirect Effects

The PRB FEIS discussed direct and indirect effects to migratory birds on pp. 4-231 to 4-235. Effects to migratory birds from surface disturbing and disruptive activities associated with development of oil wells were analyzed in the Sahara POD EA, WY-070-EA13-72, 2013, Section 4.6.2.2, pp. 31-33, incorporated here by reference. Activities associated with development of Jireh Fed 35-13 Alt D DIR well are anticipated to be similar in nature, with the following additional site-specific information.

Habitat disturbance and disruptive activities (i.e. drilling, construction, completion, operations, and maintenance) resulting from the project are likely to affect migratory birds in the area. BLM identified suitable nesting habitat present for several BLM sensitive sagebrush obligates. Construction of the well pad, access road, and buried power line will remove habitat and could kill BLM sensitive migratory birds, or destroy eggs. Approximately 4 acres of native habitats would be lost directly with the construction of well pads, access roads, and overhead power lines. Surface disturbing activities that occur in the nesting season may kill migratory birds. Prompt re-vegetation of short-term disturbance areas should reduce habitat loss impacts. Pad construction, drilling, and to a lesser degree production, would displace edge-sensitive migratory birds from otherwise suitable habitat adjacent to the well pad.

Migratory bird species in the PRB nest in the spring and summer and are vulnerable to the same effects as GSG and raptor species. Though no timing restrictions are typically applied specifically to protect migratory bird breeding or nesting, where GSG 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. Surface disturbing activities associated with the Jireh Fed 35-13 Alt D DIR project will have GSG and raptor timing limitations applied, thereby providing protection to migratory birds until June 30. Daube committed to conduct all surface disturbing activities outside the typical breeding season for the greatest quantity of BLM sensitive passerines (May 1 – July 31), unless a clearance survey is conducted (SUPO, p. 7). The restriction on habitat removal reduces the risk that active nests will be destroyed, as most nestlings will have fledged by August 1, and that the BLM and Daube conform to the MBTA, the BLM-FWS MOU, and BLM IM No. 2013-005. 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). Daube has committed to effectively exclude migratory birds from all facilities that pose a mortality risk, including, but not limited to, heater treaters, flare stacks, and secondary containment where escape may be difficult or wildlife toxicants are present (SUPO, p. 7).

4.5.4.2. Cumulative Effects

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

4.5.4.3. Mitigation Measures

No mitigation beyond the operator committed measures is recommended under alternative B.

4.5.4.4. 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.

4.5.5. Raptors

4.5.5.1. 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 disturbance in proximity of nesting raptors, including direct and indirect habitat losses associated with declines in habitat effectiveness. Human activities in 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. Either action can result in egg or chick mortality. BLM recommends the location of all infrastructures requiring human visitation be designed to provide an adequate biologic buffer for nesting raptors. A biologic buffer is a combination of distance and visual screening providing nesting raptors with security such that routine activities preclude flushing the raptors.

BLM biologist and the operator reduced impacts to raptors by adjusting placement of wells and infrastructure. The well is proposed within 0.5 miles of nests 12607 and 13361, but outside the FWS recommended spatial buffer for red-tailed hawk. The distance from the proposed well to the nests is expected to be adequate to reduce impacts to the nest from human activities at the well pad during the production phase of the project. To protect active raptor nests within 0.5 miles of the project area from failure, Daube committed to conduct all surface disturbing and disruptive activities outside of the raptor breeding/nesting season (February 1 – July 31) (SUPO, p. 17).

4.5.5.2. 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.

4.5.5.3. Mitigation Measures

No mitigation beyond the operator committed measures is recommended under alternative B.

4.5.5.4. Residual Impacts

Even with timing restrictions, raptors may abandon nests due to foraging habitat alteration associated with development or sensitivity to well or infrastructure placement. All raptors using nests 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.

4.5.6. Plains Sharp-tailed Grouse

4.5.6.1. 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 are expected to be similar to those described in section 4.6.1.2 (Greater Sage-Grouse). Sharp-tailed grouse may avoid habitats adjacent to the project area. The nearest known lek is not expected to be impacted. Construction and maintenance activities associated with development of the proposed project will cause direct habitat loss and fragmentation. Suitability of the project area for sharp-tailed grouse would be negatively affected due to habitat loss and fragmentation and proximity of human activities associated with energy development.

4.5.6.2. Cumulative Effects

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

4.5.6.3. Mitigation Measures

No mitigation is proposed with alternative B.

4.5.6.4. Residual Impacts

No residual impacts are anticipated.

4.6. Cultural Resources

The proposal will not impact any historic properties. Following the Wyoming State Protocol Section VI(A)(1) the BLM notified the WSHPO on January 23, 2014 that no historic properties exist in the area of potential effect (APE). If Daube observe any cultural values [sites, artifacts, human remains (Appendix L PRB FEIS and ROD)] during operation of this lease/permit/right-of-way, they will be left intact and the Buffalo Field Manager notified. Standard COA (General)(A)(1) further explains discovery procedures.

4.6.1. Cumulative Effects

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. Also, 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 proposal 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 large plans of coalbed natural gas 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.

4.6.2. Mitigation Measures

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

4.6.3. 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.

5. CONSULTATION/COORDINATION:

BLM Consulted or Coordinated with the Following on this Analysis; OSP (Onsite Presence):

NAME	TITLE	AGENCY	OSP?
James Marshall	Consulting Engineer	The Daube Company	YES
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Dale Harris	Lease Operator	The Daube Company	YES
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Darci Stafford	Wildlife Biologist	BLM	YES
Debby Green	Natural Resource Specialist	BLM	YES
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