DECISION RECORD
Liberty Petroleum Corp., Garry Roggow # 1
Environmental Assessment (EA), WY-070-EA15-220
Bureau of Land Management, Buffalo Field Office, Wyoming

DECISION. BLM approves Liberty Petroleum Corp. (LPC) Garry Roggow # 1 oil and gas well application for permit to drill (APD) described in Alternative B of the environmental assessment (EA) WY-070-EA15-220. 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).
- 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).
- Powder River Basin Oil and Gas Project Final Environmental Impact Statement (FEIS) (2003).
- Buffalo Resource Management Plan (RMP) (1985) and Amendments (2001, 2003, 2011).
- Greater Sage-Grouse Habitat Management Policy on Wyoming BLM Administered Public Lands (WY-IM-2012-019) and Greater Sage-Grouse Interim Management Policies and Procedures (WO-IM-2012-043).

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 at the following location:

#	Well Name & #	Twn	Rng	Sec	Qtr	Lease #	Status
1	Garry Roggow # 1	47N	74W	29	SESE	WYW135902	APD

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-EA15-220, and the FONSI (incorporated here by reference) found LPC's proposal for the Garry Roggow # 1 APD 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.

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

1. BLM and LPC included design features and mitigation measures (conditions of approval (COAs)) to reduce environmental impacts while meeting the BLM's need. For a complete description of all site-specific COAs, see the COAs.
    a. The impact of this development cumulatively contributes to the potential for local extirpation of the Greater Sage Grouse (GSG) yet its effect is acceptable because it is outside priority habitats and is within the parameters of the PRB FEIS/ROD and current BLM (WO-IM-2012-043) and Wyoming (WY-IM-2012-019) GSG conservation strategies.
    b. With application of Standard Operating Procedures (SOPs), applied mitigation, Required Design Features, and COAs identified for Greater Sage-Grouse under the proposed action, impacts caused by surface-disturbing and disruptive activities would be minimized.
    c. There are no conflicts anticipated or demonstrated with current uses in the area.

2. The Resource Management Plan (RMP) for the Buffalo Field Office is currently undergoing revision. The Proposed RMP and Environmental Impact Statement were released in May 2015. The proposed action was screened against the Proposed RMP to ensure that the proposed action would not preclude BLM's ability to select any alternative in a ROD. The proposed action was also determined to not be inconsistent with the direction outlined in the RMP's Proposed Alternative.
3. LPC will conduct operations to minimize adverse effects to surface and subsurface resources, prevent unnecessary surface disturbance, and conform with currently available technology and practice.
4. The selected alternative will help meet the nation's energy needs, and help stimulate local economies by maintaining workforce stability.
5. 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.
6. The operator certified they have a surface access agreement.
7. The project is clearly lacking in wilderness characteristics since it is amidst mineral development.
8. 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.

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: /s/ Duane W. Spencer Date: September 21, 2015

FINDING OF NO SIGNIFICANT IMPACT
Liberty Petroleum Corp., Garry Roggow # 1
Environmental Assessment (EA), WY-070-EA15-220
Bureau of Land Management, Buffalo Field Office, Wyoming

FINDING OF NO SIGNIFICANT IMPACT (FONSI). Based on the information in the EA, WY-070-EA15-220, 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 Powder River Basin (PRB) Oil and Gas Project Final Environmental Impact Statement (FEIS), 2003; (2) Alternative B conforms to the Buffalo Field Office (BFO) Resource Management Plan (RMP) 1985, and amendments 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.

CONTEXT. Mineral development is a common PRB land use, sourcing over 42% of the nation's coal. The PRB FEIS foreseeable development analyzed the development of 54,200 wells. The additional development analyzed in Alternative B is insignificant in the national, regional, and local context.

INTENSITY. The implementation of Alternative B will result in beneficial effects in the forms of energy and revenue production however; there will also be adverse effects to the environment. Design features and mitigation measures included in Alternative B will reduce adverse environmental effects. The preferred alternative does not pose a significant risk to public health and safety. The geographic area of the project does not contain unique characteristics as identified in the 1985 RMP, the 2003 PRB FEIS, or other legislative or regulatory processes. BLM used relevant scientific literature and professional expertise in preparing the EA. The scientific community is reasonably consistent with their conclusions on environmental effects relative to oil and gas development. Research findings on the nature of the environmental effects have minor controversy, are not highly uncertain, or do not involve unique or proven risks. The PRB FEIS predicted and analyzed oil development of the nature proposed with this project and similar projects. The selected alternative does not establish a precedent for future actions with significant effects. The proposal may relate to the PRB Greater Sage-Grouse and its habitat decline having cumulative significant impacts; yet this project is within the parameters of the impacts in the PRB FEIS. There are no cultural or historical resources present that will be adversely affected by the selected alternative. 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.

Field Manager: /s/ Duane W. Spencer Date: September 21, 2015

ENVIRONMENTAL ASSESSMENT (EA), WY-070-EA15-220
Liberty Petroleum Corp., Garry Roggow # 1
Bureau of Land Management, Buffalo Field Office, Wyoming

1. INTRODUCTION

BLM provides an EA for Liberty Petroleum Corp. (LPC) Gary Roggow #1 oil and gas well application for permit to drill (APD). BLM's jurisdiction for this proposal is fee (non-federal) surface – overlying federal minerals "split-estate". This site-specific analysis tiers into and incorporates by reference the information and analysis in the Powder River Basin Oil and Gas Project Final Environmental Impact Statement and Plan Amendment (PRB FEIS), WY-070-02-065, 2003, 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.

1.1. Background

The above-referenced Garry Roggow # 1APD was received on September 12, 2014.

The Garry Roggow # 1 Notice of Staking (NOS) was assigned March 24, 2014. The pre-approval NOS onsite was scheduled and held on June 5, 2014. On July 1, 2014 Jack Hanson met with BLM and went over all components that would be needed for a complete APD package. On September 11, 2014 the Garry Roggow #1/Liberty NOS was returned. This well was returned as the operator failed to submit an APD within the 60 day time frame and 30 day extension. On September 12, 2014 the Garry Roggow #1 APD was received.

The pre-approval APD onsite was conducted on November 25, 2014 by the following personnel:

NAME	TITLE	AGENCY
Andy Perez	NRS	BLM
Bill Osthiemer	Wildlife Biologist	BLM
Jack Hanson	Consultant	Liberty Petroleum Corp
Jim Hall	Landowner	

The operator turned in the Post APD Onsite Deficiencies for a third time on April 24, 2015. The operator was on their third BLM APD extension and fourth round of deficiencies from the time of the original NOS. BLM sent LPC the third Post Onsite Deficiency Letter (fifth round of deficiencies) on May 21, 2015. On July 22, 2015 BLM attempted to contact Jack Hanson as the third Post APD Deficiency Letter that was due on July 12, 2015 was 10 days overdue from the 45 day allotted timeframe. On July 28, 2015 BLM granted LPC an extension of two weeks starting effective immediately. The operator turned in deficiencies on the last day there extension on August 14, 2015.

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. BLM incorporates by reference here, the APD information (40 CFR 1502.21). 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 (see administrative record, AR), to identify potentially affected resources, land uses, resource issues, regulations, and site-specific circumstances not addressed in the tiered analysis or other analyses incorporated by reference. The APD and associated plans as well as the AR are available for review at the BFO. This EA will not discuss resources and land uses that are not present, unlikely to receive material affects, or that the PRB FEIS or other analyses adequately addressed. This EA addresses the project's 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.

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 FEIS Record of Decision (ROD) in order to lawfully exercise conditional lease rights. Fluid mineral development could continue on state and private leases. The PRB FEIS considered a no action alternative, pp. 2-54 to 2-62.

2.2. Alternative B Proposed Action (Proposal)

Table 2.1. Well Name/#/Lease/Location:

#	Well Name & #	Twn	Rng	Sec	Qtr	Lease #	Status
1	Garry Roggow # 1	47N	74W	29	SESE	WYW135902	APD

Drilling, Construction and Production Design Features Include:

- This is a wildcat well to the Parkman formation to depth of 7,340 feet.
- There will be a reserve pit on location.
- This is a vertical will that has no horizontal lateral planned at this time.
- To access the Garry Roggow # 1 well take highway 50 south of Gillette, WY for 18.8 miles to an existing road on the west side of highway 50. This existing road is also reference by the U.S. Postal Mail Box # 2490. Turn west on the existing road and travel 2.26 miles to the proposed well access. The Proposed well access consists of 400 feet to the proposed well location.
- Running surface width to be approximately 16', total disturbed width to be no more than 30' or as agreed upon with the private surface owner. The road will be crowned and ditched, as agreed to by the private surface owner. Plans for improvement and/or maintenance of existing roads are to maintain in as good or better conditions than at present. A regular maintenance plan will include, but not be limited to blading, ditching, surfacing, and replacing damaged culverts.
- The access road will be 400' long with a total ROW width of 30'. Totals disturbance of the access road will be 0.28 acres.
    - Three (3) turnouts for safety=0.17 acres

- No overhead power is anticipated at this time. If the well is completed as a producer LPC will utilize natural gas to power the well.
- The source/drilling of water will be fresh water from a water well (permit # UW189087) located on 1206 Southern Drive, Gillette, WY. The anticipated volume of water to drill the well is approximately 11,526 bbls. The water for completions operations will be approximately 9,000 bbls.
- A production facility will be located on the well site. The facility will consist of a wellhead, pumping unit, separator, 2 oil production tanks (400 bbl capacities) and one water production tank. The oil will be trucked from the location. Measurement of the oil will accomplished via daily tank gauges in strapped tanks. In the event the well produces water, the water will be hauled to a nearby approved, permitted, disposal facility. Berms will be constructed around the tanks and separator and the capacity of the berm will be 110% of the largest vessel independent of the back cut.

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

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.

Table 2.2. Drilling Disturbance Summary for Garry Roggow # 1 well/pad/access:

Facility	Number or Miles or FT	Factor	Disturbance
Engineered Pad/ Spoils and Topsoil piles	Varies (see design)	43,560 sq ft	4.24 acres
New Proposed Roads	400 ft	30	0.28 acres
New Proposed Turnouts	3	100 X 25 ft	0.17 acres
Total Surface Disturbance			**4.69 acres**

Table 2.3. Interim Disturbance Summary for Garry Roggow # 1 well/pad/access:

Facility	Number or Miles	Factor	Disturbance
Engineered Pad Interim Design	Varies (see design)	Varies (see design)	2.85 acres
New Proposed Roads	400ft	16ft	0.15 acres
New Proposed Turnouts	3	100 X 25 ft	0.17 acres
Total Surface Disturbance			**3.17 acres**

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

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

3. AFFECTED ENVIRONMENT

This section briefly describes the physical and regulatory environment that may be affected by the

alternatives in Section 2, or where changes in circumstances or regulations occurred since 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). The total number of conventional wells in the Buffalo planning area is 2,855, which includes 845 horizontal wells (federal, fee, and state) (as of December 2014). This represents 89% of the projected 3,200 in the 2003 PRB ROD. This agrees with the PRB FEIS which analyzed the reasonably foreseeable development of 51,000 CBNG and 3,200 natural gas and oil wells.

Table 3.1. NEPA Analyses Which BLM Incorporates by Reference either as similar drilling analyses or as substantially similar analyses.

#	Project Name	Operator	NEPA Analysis #	# / Type Wells	Approved Mo/Yr/Update
1[a]	Mufasa Fed 11-31H	Lance	WY-070-EA12-062	1 Oil	3/2012
2[b]	Crazy Cat East	Anadarko	WY-070-EA13-028	24+/- Oil Pads	2/2013
3	Sahara POD	Lance	WY-070-EA13-72	21Oil	3/2013

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

a. While not overlapping, incorporate those sections describing and analyzing hydraulic fracturing, its supporting analysis, and the Greater Sage-grouse Section 3.7.12 and 4.8.2.

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

3.1. Air Quality

Refer to the PRB FEIS pp. 3-291 to 3-299, for a 2003-era description of the air quality conditions. BLM incorporates by reference, Update of Task 3A Report for the Powder River Basin Coal Review Cumulative Air Quality Effects for 2020, BLM (AECOM), 2009, (Cumulative Air Quality Effects, 2009) (available at http://www.blm.gov/wy/st/en/programs/energy/Coal_Resources/PRB_Coal/prbdocs.html) as it captures the cumulative air quality effects of present and projected PRB fluid and solid mineral development. Existing air quality in the PRB is "unclassified/attainment" with all ambient air quality standards. It is also in an area that is in prevention of significant deterioration zone. PRB air quality is a rising concern due to PRB-area air quality alerts issued in 2011-2014 for particulate matter (PM), attributed to coal dust.

Four sites monitor the air quality in the PRB: Cloud Peak in the Bighorn Mountains, Thunder Basin northeast of Gillette, Campbell County south of Gillette, and Gillette. In addition, the Wyoming Air Resource Monitoring System (WARMS) measures meteorological parameters from 9 sites throughout the State, and particulate concentrations from 5 of those sites, monitors speciated aerosol (3 locations), and evapotranspiration rates (1 location). The sites monitoring air quality for the Powder River Basin are located at Sheridan, South Coal Reservoir, Buffalo, Fortification Creek, and Newcastle. The northeast Wyoming visibility study is ongoing by the Wyoming Department of Environmental Quality (WDEQ). Sites adjacent to the Wyoming PRB-area are at Birney on the Tongue River 24 miles north of the Wyoming-Montana border, Broadus on the Powder River in Montana, and Devils Tower. Adgate, et al. (2014) advanced a hypothesis that air and water quality effects from HF may negatively impact human health but concluded that "major uncertainties" and a "paucity of baseline data" after drilling 153,260 wells since 2004. They called for more research funding.

Existing air pollutant emission sources in the region include:

- Exhaust emissions (primarily CO and nitrogen oxides (NOx)) from existing natural gas fired compressor engines used in production of natural gas and CBNG; and, gasoline and diesel vehicle tailpipe emissions of combustion pollutants;
- 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,
- SO_2 and NOx from power plants.

3.2. Soils, Ecological Sites, and Vegetation

Project area soils developed in alluvium and residuum derived mainly from the Wasatch Formation. Lithology consists of light to dark yellow and tan siltstone and sandstones with minor coal seams resulting in a wide variety of surface and subsurface textures. The project area soil depths vary from 3 - 6" on the ridge top to shallow on the steeper slopes Reclamation potential of soils also varies in the project area. The main soil limitations include: depth to bedrock, low organic matter content, and high erosion potential especially in areas of steep slopes.

The Campbell County Survey Area, Wyoming Soil Survey Geographic (SSURGO) Database WY605, provides detailed soils identification and data. 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 activity or action. The agency's long term goal for soil resource management is to maintain, improve, or restore soil health and productivity, and to prevent or minimize soil erosion and compaction. Soil management objectives are to ensure that adequate soil protection is consistent with the resource capabilities. Soils and landforms of this area may present distinct challenges for development, and/or eventual site reclamation. Dominant/Important Soils/Ecological sites in the affected area are loamy soils. The major ecological site for the project is Loamy.

Table 3.1. Soils and Ecological Sites

Well Name & No. Pad	Map Unit Name	Ecological Site
Garry Roggow # 1	148:Forkwood-Ulm loams 0-6% slopes	10-14 NP Loamy

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

See the NRCS Soil Survey WY605, Campbell County (SSURGO) data for more detailed soil information. Ecological Site Descriptions (ESD's) include additional site-specific soil information.

3.3. Ecological Sites and Vegetation

The elevations range from 4,500-5,250 feet in the project area. Livestock grazing is the predominat land use in the area as well as oil and gas development. The project area is comprised primarily of a Loamy ecological site and the major plant community identified in the project area is Mixed Sagebrush/Grass Plant Community. This site occurs on ridges on uplands, hills on uplands. The parent material consists of alluvium derived from shale and sandstone. Depth to bedrock is 40-60 inches. The natural drainage class is well drained. Shrink swell factor potential is moderate. The main soil limitations include: low organic matter (2%) content and soil droughtiness. The low annual precipitation should be considered when planning a seeding.

Mixed Sagebrush/Grass Plant Community

This mixed sagebrush/grass community is under moderate, season-long livestock grazing. Wyoming big sagebrush is a significant component of this plant community. Cool-season grasses make up the majority

of the understory with the balance made up of short warm-season grasses, annual cool-season grasses, and miscellaneous forbs. Dominant grasses may include needleandthread, western wheatgrass, and green needlegrass. Grasses of secondary importance include blue grama, prairie junegrass, and Sandberg bluegrass. Forbs commonly found in this plant community include plains wallflower, hairy goldaster, slimflower scurfpea, and scarlet globemallow. Sagebrush canopy ranges from 20% to 30%. Fringed sagewort is commonly found. Plains pricklypear also occurs.

When compared to the Historic Climax Plant Community, sagebrush and blue grama have increased. Production of cool-season grasses, particularly green needlegrass, has been reduced. The sagebrush canopy protects the cool-season mid-grasses, but this protection makes them unavailable for grazing. Cheatgrass (downy brome) has invaded the site. The overstory of sagebrush and understory of grass and forbs provide a diverse plant community that will support domestic livestock and wildlife such as mule deer and antelope. This plant community is resistant to change. A significant reduction of big sagebrush can only be accomplished through fire or brush management. The herbaceous species present are well adapted to grazing; however, species composition can be altered through long-term overgrazing. If the herbaceous component is intact, it tends to be resilient if the disturbance is not long-term.

During the onsite blue bunch wheatgrass, needle and thread, phlox, and Wyoming big sagebrush were identified.

3.4. Water Resources

WDEQ regulates Wyoming's water quality with EPA oversight. The Wyoming State Engineer's Office (WSEO) has authority for regulating water rights issues and permitting impoundments for the containment of the State's surface waters. The WOGCC has authority for permitting and bonding off channel pits located over state and fee minerals.

3.4.1. Groundwater

A search of the WSEO Ground Water Rights Database showed no registered stock and domestic water wells within 1 mile of the proposed well. However, there are 10 CBNG wells that vary in depth from 1,397-1,703 feet. Refer to the PRB FEIS for additional information on groundwater, pp. 3-1 to 3-36. In the PRB, the Fox Hills formation is the deepest fresh water aquifer which merits specific attention. In this area, the depth to the Fox Hills is 5,003 feet.

3.4.2. Surface Water

The project area is in the Upper Beaver Creek drainage which is a tributary to the Powder River. 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 the PRB FEIS for a surface water quality discussion, pp. 3-48 to 3-49.

3.5. Wetlands/Riparian

The Garry Roggow # 1 well, is located on an upland site and access by existing roads also located in uplands. No wetland or riparian habitats are impacted by this project.

3.6. Invasive or Noxious Species

Cheatgrass (*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 throughout NE Wyoming. Balch, 2013, linked the proliferation of cheatgrass in semi-arid environments to the increased frequency and severity of wildfire.

3.7. Fish and Wildlife

The PRB FEIS identified wildlife species occurring in the PRB, pp. 3-113 to 3-206. The location was visited by a BLM biologist at the onsite inspection. Due to habitat characteristics, the BLM requested surveys for raptor and sage-grouse. A habitat assessment and surveys for grouse, raptors and sensitive species was performed by Zander Environmental LLC in 2015. BLM sensitive species expected to occur in the project area are documented in the Administrative Record (Table W.1. Summary of Threatened, Endangered and Sensitive Species Habitat and Project Effects).

3.7.1. Greater sage-grouse (GSG)

The PRB FEIS has a detailed discussion on GSG ecology and habitat, pp. 3-194 to 3-199. Subsequently the USFWS determined the Greater Sage-Grouse (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). Lance's Sahara POD EA, WY-070-EA13-72 analysis is incorporated here by reference due to project and habitat similarity: Affected Environment (Section 3.7.4.1, p.18-19).

Site Specific Habitat

WGFD records indicate that one GSG lek, North Beaver Creek, occurs within 2 miles of the project area. The project area is not in a core or connectivity habitat area, as identified in EO 2015-4, Greater Sage-grouse Core Area Protection. BLM confirmed suitable nesting, brood rearing, and winter habitat is present at the well area. Zander also observed GSG sign during spring surveys. Zander reported scat piles indicative of winter use. No breeding or nesting sage-grouse were seen within 0.5 miles of the well stake in the 2015 survey season.

3.7.2. Migratory Birds

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

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

3.8. Cultural Resources

In accordance with section 106 of the National Historic Preservation Act, BLM must consider impacts to historic properties (sites that are eligible for or listed on the National Register of Historic Places (NRHP)). For an overview of cultural resources that are generally found within BFO the reader is referred to the *Draft Cultural Class I Regional Overview, Buffalo Field Office* (BLM, 2010). A Class III (intensive) cultural resource inventory (BFO project no. 70150053) was performed in order to locate specific historic properties which may be impacted by the proposed project. No cultural resources are located in the proposed project area.

4. ENVIRONMENTAL EFFECTS

No Action Alternative. BLM analyzed the no action alternative as Alternative 3 in the PRB FEIS and it subsequently received augmentation of the effects analysis in this EA through the analysis of mineral

projects, their approval, and construction; and through the analysis and approval of other projects. This updated the no action alternative and cumulative effects. Under the no action alternative, on-going well field operations would continue as would the development of fee wells 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 mineral development would not violate state, tribal, or federal air quality standards and this project is well within the projected development parameters.

The PRB FEIS analyzed direct and indirect impacts to soils associated with fluid mineral development. For these affects refer to p. 4-134-149 of the PRB EIS.

4.2. Soils

The greatest impacts to the soil resources associated with this project would occur with the construction of the well pad and road upgrades. Construction of these requires grading and leveling, with the greatest level of effort required on more steeply sloping areas. These impacts would begin immediately as the soils would be subjected to grading and construction activities and impacts would continue for the term of operations. The duration and intensity of these impacts would vary according to the type of construction activity to be completed and the inherent characteristics of the soils to be impacted.

The proposed APD requires 4.69 acres total disturbance to safely drill the proposed well. During the construction and drilling phase of the project, the operator plans to maintain cut and fill slopes at 1½:1(67%), 2:1(50%) slopes. These constructed slopes will be bare ground void of vegetation thus identified as highly erosive due to water erosion, and the total 4.69 acres site is classified as highly erosive for wind erosion. The predicted construction cut depth exceeds the identified soil depth, thus impacting soil horizons described as “little affected by pedogenic processes”, or unaltered parent material. The physical and chemical properties of this material may be variable and limiting in its potential to support plant growth, variable in erosion potential and suitability for construction material. The 4.24 acre engineered pad area would be defined as an Low Reclamation Potential (LRP) area per Wyoming Reclamation Policy, and p. 4-143 and 4-149 of the PRB-EIS.

The well pad will be reduced to 2.85 acres of disturbance at interim reclamation for the production phase. See Exhibit IX for an illustration of the well pad reduction as per Onshore Oil and Gas Order Number 1 Surface Use Plan of Operations. Cut slopes and fill slopes will be maintained at 2:1 and 3:1 respectively as per standard conditions of approval. Road running surface is 16 feet with the remaining right-of-way (ROW) to be re-contoured and seeded. The operator committed measures and attached mitigation

measures listed below this section reduce the potential impacts to the soil resource to levels described in the PRB-FEIS.

Changes in soil productivity would depend on the success of the stabilization and interim reclamation efforts. The replaced soil could support stable and productive vegetation adequate in quantity and kind to support the post disturbance land uses- wildlife habitat and rangeland. After reclamation (interim and final), the soils would be unlike the predisturbance soils in structure, horizon, bulk density, and chemical composition. The new soils would be more uniform in type, thickness and texture than the predisturbance soils. The soil-forming processes would be disturbed, resulting in the alteration of soil characteristics and, consequently, the taxonomic classification of the soils. Productivity capabilities, biologic activity, and nutrient content also would be affected.

4.2.1. Cumulative Effects

The PRB FEIS defined the duration of disturbance, pp. 4-1 and 4-15. The impacts to the soil resource described in the direct and indirect effects section could be minimized by reducing initial surface disturbance, successful site stabilization and maximum interim reclamation, as committed to by the operator in their POD Surface Use Plan and as required by the BLM in COAs. (Total initial and long term disturbance) PRB-FEIS 4-134. Most of the disturbance associated with the construction of the well pad would be short term. See Sheet 5 of 11 in the MSUP for production phase pad design (interim reclamation phase)..

4.2.2. Mitigation Measures

The operator will reduce impacts to vegetation and soils from surface disturbance by following its plans (MSUP, and (design features, engineered designs), Storm Water Pollution Prevention Plan (SWPPP) requirements, reclamation plan and the BLM Wyoming Reclamation Policy). These practices, as well as other approved mitigation measures will result in less surface disturbance and environmental impacts. In addition the following site specific COAs will be added as mitigation.

1. The entire access road must be fully updgraded (including all water control structures such as wing ditches, culverts, relief ditches, turnouts, surfacing, etc.) and functional to BLM standards prior mobilizing the drilling equipment to the well location.
2. Re-contouring and interim reclamation will be initiated as soon as is practicable but not more than 6 months from the date of the well completion incorporating stored soil material into that portion of the well pad not needed for well production; exception(s) may be granted with sufficient justification.
3. Soil compaction will be remediated on all compacted surfaces and prior to the redistribution of topsoil on disturbed surfaces to the depth of compaction by methods that prevent mixing of the soil horizons. BLM's recommended methods are subsoiling, paraplowing, or ripping with a winged shank. Scarification is acceptable on areas identified as very shallow or shallow soils.

4.2.3. Residual Effects

The PRB FEIS identified residual effects (p. 4-408). Residual effects across the project area would include a long-term loss of soil productivity associated with the well pad and road. Alteration of soils would result in the formation of new soil with different properties. Post disturbance productivity should be simular to predisturbance. In spite of the above residual effects, the BLM considers that Alternative B is within the parameters for surface disturbance and surface disturbance reclamation in PRB FEIS ROD.

4.3. Vegetation and Ecological Sites

4.3.1. Direct and Indirect Effects

The PRB FEIS discusses direct and indirect effects to ecological sites and vegetation (p. 4-153 to 4-164). The proposed action would impact the existing plant communities, species richness, diversity, and structure that occur on the site and the transition between the communities. Other impacts anticipated to occur include those in the direct and indirect effects listed above under the soils section. Direct effects to

ecological sites would occur from ground disturbance caused by construction practices. Short term effects would occur where vegetated areas are disturbed but later reclaimed as soon as practical from initial disturbance. Long-term effects would occur where well pads, roads, and other semi-permanent facilities, result in loss of vegetation and prevent reclamation for the life of the project. Other impacts include a reduction in the utility of interim reclaimed areas because of reduced species and landscape diversity on reclaimed sites, increased soil erosion, and habitat loss for wildlife and livestock.

4.3.2. Cumulative Effects

The PRB FEIS discusses the cumulative effects to ecological sites (pp. 4-153 to 4-172). Cumulative effects to ecological sites include the further alteration of disturbance regimes from the increased disturbance, increase in noxious weeds, and alterations in vegetation community's diversity and cover.

4.3.3. Mitigation Measures

Implementation of operator's MSUP (specifically Plans for Reclamation of the Surface), agreed to COAs, and mitigation measures described in the operator's Integrated Weed and Pest Management Plan will reduce surface disturbance impacts to ecological sites and vegetation. See the administrative record.

4.3.4. Residual Effects

Residual effects were also identified in the PRB FEIS, p. 4-408. Including loss of vegetative cover during construction, interim reclamation and long-term on well location and access road. The potential spread and establishment of weeds, and alteration of species biodiversity until successful final reclamation. Successful interim reclamation should create a stable functioning ecosystem that prepares the site for eventual final reclamation, which would reduce the residual effects of the proposed action.

4.4. Water/Groundwater Resources

LPC's drilling program provides protection for the Fox Hills formation. The casing design and cement program includes centralizers on every joint of casing to facilitate adequate cement covering. The volume of cement pumped is calculated to provide cement across the Fox Hills from 100 feet above to 100 feet below the aquifer. 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. The operator will set surface casing at 500 feet to provide additional protection for shallow groundwater aquifers and coal zones. 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.

4.4.1. Cumulative Effects

LPC 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, LPC 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.

4.4.2. Mitigation Measures

Adherence to the drilling COAs, the setting of casing at appropriate depths, following safe remedial procedures in the event of casing failure, and utilizing proper cementing procedures would protect fresh water aquifers above the target coal zone. Adherence to WDEQ permits and regulations will also mitigate

impacts from produced water. This will ensure that groundwater will not be adversely impacted by well drilling and completion operations.

4.4.3. Residual

No residual effects are anticipated.

4.5. Invasive Species

4.5.1. 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; 2) Preventive practices; and 3) Education. The use of existing facilities along with the surface disturbance associated with construction of the proposed access road, 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.

4.5.2. Cumulative Effects

Cumulative effects resulting from invasive species are discussed in the PRB FEIS, p. 4-171.

4.5.3. Mitigation Measures

Successful reclamation through application of the operator's reclamation plans will discourage establishment of invasive species during operations. In addition, measures incorporated into the programmatic COAs listed in the COA document will further mitigate the potential spread and establishment of weed species. The operator will be responsible for prevention and control of noxious weeds and weeds of concern on all areas of surface disturbance associated with this project (well locations, roads, water management facilities, etc.). Use of pesticides shall comply with the applicable federal and state laws.

4.5.4. Residual Effects

Control efforts by the Operator would be limited to the surface disturbance associated the construction and operation of the project. Cheatgrass and other weed species that are present within non-physically disturbed areas of the project area are anticipated to continue to spread unless control efforts are expanded.

4.6. Fish and Wildlife

4.6.1. Greater sage-grouse

Effects (Direct and indirect, Cumulative, Mitigation, and Residual) to GSG from surface disturbing and disruptive activities associated with development of horizontal oil wells were analyzed in the Lance Sahara POD EA, WY-070-EA13-72, 2013, Section 4.6.4.1, pp. 34-37, incorporated here by reference. Activities associated with development of this project are anticipated to be similar in nature, with the following additional site-specific information.

The proposal area contains suitable nesting habitat, and demonstrated winter use. No breeding or nesting was confirmed through survey. Construction of the well and associated infrastructure will cause fragmentation of sagebrush stands and result in the direct loss of approximately 4 acres (see Table 2.2-3a. Disturbance Summary) of GSG habitat. Noise and human disturbance associated with operations will be disruptive to GSG. BLM will prohibit construction and drilling during the breeding and nesting season. Implementation of the project will adversely impact habitat, both through direct loss of suitable habitats and avoidance of the area by GSG due to fragmentation and anthropogenic activity.

4.6.2. Migratory Birds Effects

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

4.7. Cultural Resources

4.7.1. Direct and Indirect Effects

BLM policy states that a decision maker's first choice should be avoidance of historic properties (BLM Manual 8140.06(C)). If historic properties cannot be avoided, mitigation measures must be applied to resolve the adverse effect. No historic properties will be impacted by the proposed project. Following the *State Protocol Between the Wyoming Bureau of Land Management State Director and The Wyoming State Historic Preservation Officer*, Section V(E)(iv), the Bureau of Land Management electronically notified the Wyoming State Historic Preservation Officer (SHPO) on 09/04/15 that no historic properties exist within the area of potential effect (APE). If any cultural values (sites, features or artifacts) are observed during operation, they will be left intact and the Buffalo Field Manager notified. If human remains are noted, the procedures described in Appendix L of the PRB FEIS must be followed. Further discovery procedures are explained in Standard COA (General)(A)(1) and in Appendix K of the Wyoming Protocol.

4.7.2. 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. Destruction of any archeological resource results in fewer opportunities to study of past human life-ways, to study changes in human behavior through time, or to interpret the past to the public. Additionally, these impacts may compromise the aspects of integrity that make a historic property eligible for the National Register of Historic Places. Recording and archiving basic information about archaeological sites and the potential for subsurface cultural materials in the proposed project area may serve to partially mitigate potential cumulative effects to cultural resources.

Fee actions constructed in support of federal actions can result in impacts to historic properties. Oil and gas development on split estate often includes construction of infrastructure that does not require permitting by BLM. Project applicants may integrate infrastructure associated with wells draining fee minerals with wells that require federal approval. BLM has no authority over fee actions, which can impact historic properties. BLM has the authority to modify or deny approval of federal undertakings on private surface, but that authority is limited to the extent of the federal approval. Historic properties on private surface belong to the surface owner and they are not obligated to preserve or protect them. The BLM may go to great lengths to protect a site on private surface from a federal undertaking, but the same site can be legally impacted by the landowner at any time. Archeological inventories reveal the location of sensitive sites and although the BLM is obligated to protect site location data, information can potentially get into the wrong hands resulting in unauthorized artifact collection or vandalism. BLM authorizations that result in new access can inadvertently lead to impacts to sites from increased visitation by the public.

4.7.3. Mitigation Measures

If any cultural values (sites, features or artifacts) are observed during operation, they will be left intact and the Buffalo Field Manager notified. If human remains are noted, the procedures described in

Appendix L of the PRB FEIS must be followed. Further discovery procedures are explained in Standard COA (General)(A)(1) and Appendix K of the Wyoming Protocol.

4.7.4. 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):

Contact	Organization	OSP?
Jack Hanson	JKA Services	Yes
James Hall	Landowner	Yes

List of Preparers (BFO unless otherwise noted)

Position/Organization	Name	Position/Organization	Name
NRS/Team Lead	Andy Perez	Archaeologist	Seth Lambert
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Petroleum Engineer	Will Robbie	Geologist	Kerry Aggen
LIE	Sharon Soule	Assistant Field Manager	Chris Durham
Supr NRS (Resources)	Bill Ostheimer	NEPA Coordinator	Tom Bills

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