

EA NO-WY-070-EA09-157
FINDING OF NO SIGNIFICANT IMPACT & DECISION RECORD
FOR
Lowry Exploration Inc.
Zoe Draw Federal 22-9R

DECISION: It is my decision to authorize the following Application for Permit to Drill (APD) for Lowry Exploration Inc.

Well Name & Number	QTR	Sec.	T	R	Lease #
Zoe Draw Federal 22-9R	SEnw	9	51N	69W	WYW111040

This approval is subject to adherence with operating plans and mitigation measures contained in the Surface Use Plan of Operations and Drilling Plans in the APD. This approval is also subject to adherence with the attached Conditions of Approval and all mitigation and monitoring requirements contained within the Powder River Oil and Gas Project Environmental Impact Statement and Resource Management Plan Amendment (PRB FEIS) approved April 30, 2003

RATIONALE: The decision to authorize the proposed action will not result in any undue or unnecessary environmental degradation. The lessee has the right to develop their existing lease provided no significant adverse or irreversible impacts occur to critical resources.

The proposed action is in conformance with the Powder River Oil and Gas Project EIS and Resource Management Plan Amendment (PRB FEIS) approved April 30, 2003 and the Approved Resource Management Plan for the Public Lands Administered by the Bureau of Land Management (BLM), Buffalo Field Office, April 2001.

FINDING OF NO SIGNIFICANT IMPACT: Based on the analysis of the potential environmental impacts of the proposed action in the attached environmental assessment, I have determined that NO significant impacts are expected and, therefore, an environmental impact statement is not required.

ADMINISTRATIVE REVIEW AND APPEAL: Under BLM regulations, this decision is subject to administrative review in accordance with 43 CFR 3165. Any request for administrative review of this decision must include information required under 43 CFR 3165.3(b) (State Director Review), including all supporting documentation. Such a request must be filed in writing with the State Director, Bureau of Land Management, P.O. Box 1828, Cheyenne, Wyoming 82003, no later than 20 business days after this Decision Record is received or considered to have been received.

Any party who is adversely affected by the State Director's decision may appeal that decision to the Interior Board of Land Appeals, as provided in 43 CFR 3165.4.

Paul Beels

 ACTIVE Field Manager

9/18/09

 Date

**BUREAU OF LAND MANAGEMENT
BUFFALO FIELD OFFICE
ENVIRONMENTAL ASSESSMENT
EA # WY-070-EA09-157**

PROJECT NAME: Lowry Exploration well Zoe Draw Federal 22-9R

Well Name & Number	QTR	Sec.	T	R	Lease #
Zoe Draw Federal 22-9R	SEnw	9	51N	69W	WYW111040

OPERATOR/APPLICANT: Lowry Exploration Inc.

AFFECTED SURFACE OWNERS: Clark and Kathleen Reynolds

For contact information, refer to the Master Surface Use Plan (MSUP) in the Plan of Development (POD).

COUNTY: Campbell

INTRODUCTION: This site-specific analysis tiers into and incorporates by reference the information and analysis contained in the Powder River Basin Oil and Gas Project Environmental Impact Statement and Resource Management Plan Amendment (PRB FEIS), #WY-070-02-065 (approved April 30, 2003), pursuant to 40 CFR 1508.28 and 1502.21. This document is available for review at the Buffalo Field Office. This project EA addresses site-specific resources and impacts that were not covered within the PRB FEIS.

LAND USE PLAN CONFORMANCE: This proposed action is in conformance with the terms and conditions of the Approved Resource Management Plan for the Public Lands Administered by the Bureau of Land Management, Buffalo Field Office, April 2001 and the Powder River Oil and Gas Project EIS and Resource Management Plan Amendment (PRB FEIS) approved April 30, 2003.

NEED FOR THE PROPOSED ACTION:

The actions as described in the above-referenced APDs are needed to further develop oil and gas reserves in the United States. The APDs were submitted by private industry for development of 1 oil well on one valid federal oil and gas mineral leases issued to the applicant by the BLM.

Information contained in the APDs is considered an integral part of this environmental assessment and is, therefore, incorporated by reference (CFR 1502.21).

DESCRIPTION OF THE PROPOSED ACTION & ALTERNATIVES

No Action

A No Action Alternative was considered in the PRB FEIS, Volume 1, pages 2-54 through 2-62. This alternative would consist of no new federal wells. An oil and gas lease grants the lessee the “right and privilege to drill for, mine, extract, remove, and dispose of all oil and gas deposits” in the lease lands, “subject to the terms and conditions incorporated in the lease.” Under this alternative, the operator’s proposal would be denied.

Proposed Action

The proposed action is to drill one conventional federal oil well in the Minnelusa coal seam to depths of approximately 8000 feet. The action would be subject to the attached Conditions-of-Approval, for drilling of an oil/gas well on private surface within the Buffalo Field Office jurisdiction. For more detail on project area access, design features and construction practices of the proposed action, refer to the Master Surface Use Plan (MSUP) in the Plan of Development (POD). The plan has been written and reviewed to ensure that environmental impacts to both surface and subsurface resources are eliminated or minimized. Also see the individual APD for a map showing the proposed access road, existing roads, and well location.

The Lowry Exploration well is located as follows:

Well Name & Number	QTR	Sec.	T	R	Lease #
Zoe Draw Federal 22-9R	SEnw	9	51N	69W	WYW111040

The proposed action involves:

Activity	Length (feet)	Width (feet)	Acres of Disturbance
Wild West Unit #3H Constructed Pad	325	205	1.5
Cut/fills & Topsoil/spoil stockpiles			.5
Wild West Unit #3H Access Road (engineered section)	600	16	.2
Total Disturbance			2.2

The proposed well location require the construction of one engineered (cut & fill) well pads. There are no existing or proposed facilities for the Zoe Draw Federal 22-9R. If production is established then a Sundry Notice will be submitted with a production facility diagram.

The access road for the Zoe Draw Federal 22-9R well consists of 600 feet of new construction. The road will have a 14 foot running surface and a 16 foot subgrade. The road will be crowned and ditched for both drilling and completion operations. The access roads will be constructed to meet BLM Gold Book standards for the anticipated traffic flow and all-weather requirements. (*Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development, Fourth Edition-2007;Gold Book*) Construction will include but not limited to ditching, draining, graveling, crowning, and capping the roadbed as necessary.

One 18 inch culvert is will be installed between the existing Zoe Draw Federal 22-9 location and the Zoe Draw Federal 22-9R well location

The total surface disturbance associated with the construction of this location and road section is approximately 2.2 acres. These figures include disturbance associated with the well pad, the spoil and topsoil storage areas, and the construction equipment and vehicle disturbance.

Drilling and construction activities are anticipated to be completed within two years, the term of an APD.

Drilling and construction occurs year-round in the PRB. Weather may cause delays lasting several days but rarely do delays last multiple weeks. Timing limitations in the form of COAs and/or agreements with surface owners may impose longer temporal restrictions on portions of this POD, but rarely do these restrictions affect an entire POD.

Additionally, the Operator has committed to:

1. Comply with all applicable Federal, State and Local laws and regulations.
2. Obtain the necessary permits for the drilling, completion and production of these wells including but not limited to water rights appropriations and relevant air quality permits.

The Operator has certified that a Surface Use Agreement has been reached with the Landowners.

Changes and observations from pre-approval onsite inspection

The following table provides a summary of observations and changes made at the pre-approval onsite.

Well Name & Number	QTR	Sec.	T	R	Notes
Zoe Draw Federal 22-9R	SEnw	9	51N	69W	Topographic location is slightly flat. The dominate vegetation is grass with sparse sage. There is a small drainage on either side of location approximately 50 to 100 feet away. Existing access road will need to be bladed before drilling operation occurs. There is some evidence of sage grouse use. Proposed well location is over a reclaimed access route. There is an existing oil well (22-9) nearby. The operator plans on using the existing site to place facilities for the proposed well. No changes to the proposed pad have been made.

DESCRIPTION OF AFFECTED ENVIRONMENT

The Plan of Development for the Zoe Draw Federal 22-9R well containing the APD was received on 9/24/2008. Field inspections of the proposed well locations were conducted as follows:

4/23/2009 by Meleah Corey, Bill Ostheimer, BJ Earle, and Melvin Blakesley– BLM; Robert Anderson – Lowry Exploration Inc.

Topographic Characteristics

The Zoe Draw Federal 22-9R well is located in Campbell County approximately 30 miles NE of Gillette, WY.

The topography in the project area consists of gently rolling grasslands with mixed sage brush, dissected by ephemeral swales and occasional steep erosive ephemeral drainages. The area ranges in elevation from 4,700 to 5,000 feet above sea level. The area falls within a 15-17” precipitation zone, with most of

the precipitation falling during late winter and spring. The surface ownership in the general area is private land, with cattle grazing, coal mining, and Oil and Gas development being the primary surface uses.

Vegetation & Soils

Soils

Using the Natural Resource Conservation Service, (NRCS, USDA), Technical Guides for the Major Land Resource Area 58B Northern Rolling High Plains, in the 15-17" Northern Plains precipitation zone, the landforms and soils of this site are Loamy 15-17" PZ NP.

This site occurs on land nearly level up to 50% slopes. Landform: Hill slopes with assoc. alluvial fans & stream terraces.

The soils of this site are deep to moderately deep (greater than 20" to bedrock), well-drained & moderately permeable. Layers of the soil most influential to the plant community vary from 3 to 6 inches thick. These layers consist of the A horizon with very fine sandy loam, loam, or silt loam texture and may also include the upper few inches of the B horizon with sandy clay loam, silty clay loam, or clay loam texture.

For more detailed soil information, see the NRCS Soil Survey WY705.

The map units identified for the soils within this project area are listed in the table below.

Map Units and Ecological Sites:

WELL	Map Unit	MAP UNIT NAME
Zoe Draw Federal 22-9R	324	Ucross-Fairburn loams, 15-45 percent slopes

Vegetation

The predominant ecological site occurring within the proposed POD is found to be Loamy and the plant community consists of: Mixed Sagebrush/Grass.

Mixed Sagebrush/Grass Plant Community

Historically, this plant community evolved under grazing by bison and a low fire frequency. Currently, it is found under moderate, season-long grazing by livestock in the absence of fire or brush management. Big sagebrush is a significant component of this plant community. A mix of warm and cool-season grasses make up the majority of the understory, with the balance made up of annual cool-season grasses, and miscellaneous forbs.

Dominant grasses include needleandthread, western wheatgrass, little bluestem 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 can also occur.

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 cool-season mid-grasses are protected by the sagebrush canopy, 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.

Air Quality

Existing air quality throughout most of the Powder River Basin is in attainment with all ambient air quality standards. Although specific air quality monitoring is not conducted throughout most of the Powder River Basin, air quality conditions in rural areas are likely to be very good, as characterized by limited air pollution emission sources (few industrial facilities and residential emissions in the relatively small communities and isolated ranches) and good atmospheric dispersion conditions, resulting in relatively low air pollutant concentrations.

Existing air pollutant emission sources within the region include following:

- Exhaust emissions (primarily CO and nitrogen oxides [NOx]) from existing natural gas fired compressor engines used in production; and, gasoline and diesel vehicle tailpipe emissions of combustion pollutants;
- Dust (particulate matter) generated by vehicle travel on unpaved roads, windblown dust from neighboring areas and road sanding during the winter months;
- Transport of air pollutants from emission sources located outside the region;
- Dust (particulate matter) from coal mines;
- NOx, particulate matter, and other emissions from diesel trains and,
- SO2 and NOx from power plants.

For a complete description of the existing air quality conditions in the Powder River Basin, please refer to the PRB Final EIS Volume 1, Chapter 3, pages 3-291 through 3-299.

Cultural Resources

Class III cultural resource inventory was performed for the Zoe Draw 22-9R well and access prior to on-the-ground project work (BFO project no. 70090001). AEC conducted a block 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*. BJ Earle, BLM Archaeologist, reviewed the report for technical adequacy and compliance with Bureau of Land Management (BLM) standards, and determined it to be adequate. A field visit was made to the location. The following resources are located in or near the project area.

Site Number	Site Type	Eligibility
48 CA 1473	Historic linear Resource	Eligible
NA	Isolate	Not eligible

While the site, 48 CA 1473, the Texas Trail, is considered eligible, no physical remains of this route were located in or adjacent to the current project. No contributing portion of the site will be physically impacted. Following the Wyoming State Protocol Section VI(A)(1) the Bureau of Land Management notified the Wyoming State Historic Preservation Officer (SHPO) on 2/2/2009 that no historic properties exist within the APE. If any cultural values [sites, artifacts, human remains (Appendix L PRB FEIS)] are observed during operation of this

lease/permit/right-of-way, they will be left intact and the Buffalo Field Manager notified. Further discovery procedures are explained in the Standard COA (General)(A)(1).

Invasive Species

No state-listed noxious weeds and invasive or exotic plant infestations were discovered by a search of inventory maps and databases or during subsequent field investigation by the proposed project proponent or BLM representatives. However, the Campbell County Weed and Pest Control District office verified the potential for infestations of the following noxious or invasive species in this area: Canada thistle, Scotch thistle, Russian knapweed, white top, and field bind weed. There is a potential for the spread of invasive weeds into the disturbed sites. These sites will be monitored and effective weed control measures will be taken by the operator and/or his agent.

Wildlife

Several resources were consulted to identify wildlife species that may occur in the proposed project area. Resources that were consulted include the Coal Bed Natural Gas wildlife reports, wildlife database compiled and managed by the BLM Buffalo Field Office (BFO) wildlife biologists, the PRB FEIS, the Wyoming Game and Fish Department (WGFD) big game and sage-grouse maps, and the Wyoming Natural Diversity Database (WYNDD).

A BLM biologist conducted field visits on 4/23/2009. During this time, the biologist evaluated impacts to wildlife resources, and provided project modification recommendations where wildlife issues arose.

Wildlife species common to the habitat types present are identified in the PRB FEIS (pg. 3-114). Species identified in the project area or noted as being of special importance are described below.

Big Game

Big game species expected to be within the project area include pronghorn antelope, mule deer and white-tailed deer. The WGFD lists the project area to be Winter/Yearlong range for pronghorn antelope. Winter/Yearlong use is when a population of animals makes general use of suitable habitat sites within a range on a year-round basis. During the winter months there is a significant influx of additional animals into the area from other seasonal ranges. Big game range maps are available in the PRB FEIS (3-119-143), the project file, and from the WGFD. The project area is part of the Northern Black Hills pronghorn herd.

Aquatics

The project area drains into West Fork of Cottonwood Creek, a tributary to the Little Powder River. Fish that have been identified in the Little Powder drainage are listed in the PRB FEIS (3-156-159).

Amphibian and reptile species occur throughout the Basin, the Wyoming Natural Diversity Database is currently gathering baseline information (WYNDD 2008). Wyoming Game and Fish (WGFD), Montana Natural Heritage and Wyoming Natural Diversity Database (WYNDD) investigations have identified numerous species present within Powder River Basin including:

Table 3.2 Species of Herptiles Expected to Occur in the Powder River Basin of Wyoming (WYNDD 2008)

Common Name	Scientific Name	Found by WGF 2004-2006	Found by WYNDD 2008
Bullfrog*	<i>Rana catesbeiana</i>	Maybe	N
Spiny Softshell	<i>Apalone spinifera</i>	Y	N
Milksnake*	<i>Lampropeltis triangulum</i>	N	N
Northern Prairie Lizard*	<i>Sceloporus undulatus garmani</i>	N	N

Common Name	Scientific Name	Found by WGF 2004-2006	Found by WYNDD 2008
Boreal Chorus Frog	<i>Pseudacris maculata</i>	Y	Y
Northern Leopard Frog	<i>Rana pipiens</i>	Y	Y
Great Plains Toad	<i>Bufo cognatus</i>	Y	Y
Woodhouse's Toad	<i>Bufo woodhousii</i>	Y	Y
Plains Spadefoot toad	<i>Spea bombifrons</i>	Y	Y
Tiger Salamander	<i>Ambystoma tigrinum</i>	Y	Y
Short-horned Lizard	<i>Phrynosoma hernandesi</i>	Y	Y
Sagebrush Lizard	<i>Sceloporus graciosus</i>	Y	Y
Eastern Yellowbelly Racer	<i>Coluber constrictor flaviventris</i>	Y	Y
Prairie Rattlesnake	<i>Crotalus viridis</i>	Y	Y
Western Hog-nosed Snake	<i>Heterodon nasicus</i>	Y	Y
Bullsnake	<i>Pituophis catenifer sayi</i>	Y	Y
Terrestrial Garter Snake	<i>Thamnophis elegans</i>	Y	Y
Plains Garter Snake	<i>Thamnophis radix</i>	Y	Y
Common Garter Snake	<i>Thamnophis sirtalis</i>	Y	Y
Snapping Turtle	<i>Chelydra serpentina</i>	Y	Y
Painted Turtle	<i>Chrysemys picta</i>	Y	Y

Migratory Birds

A wide variety of migratory birds may be found in the proposed project area at some point throughout the year. Migratory birds are those that migrate for the purpose of breeding and foraging at some point in the calendar year. Many species that are of high management concern use shrub-steppe and shortgrass prairie areas for their primary breeding habitats (Saab and Rich 1997). Migratory bird species of management concern that may occur in the project area are listed in the PRB FEIS (3-151). Those species identified by the BLM biologist in the project area include; Lark Bunting, Brewers Sparrow, Vesper Sparrow, Lark Sparrow.

Raptors

Raptors species expected to occur in suitable habitats within the PRB include northern harrier, golden eagle, red-tailed hawk, Swainson's hawk, ferruginous hawk, American kestrel, prairie falcon, short-eared owl, great horned owl, bald eagle, rough-legged hawk, merlin, Cooper's hawk, northern goshawk, and long-eared owl. Raptor species nest in a variety of habitats including but not limited to; grasslands, agricultural lands, trees, cliffs and rocks.

No nests were identified on the BLM GIS database within 0.5 miles of the well site. The BLM biologist surveyed on foot using binoculars and found no nests within 0.5 miles of the well location.

Threatened and Endangered and Sensitive Species

Threatened and Endangered Species

Within the BLM Buffalo Field Office there are three species that are Threatened or Endangered under the Endangered Species Act.

Black-footed ferret (Endangered)

The USFWS listed the black-footed ferret as Endangered on March 11, 1967. Black-footed ferret are dependent on large prairie dog colonies. Active reintroduction efforts have reestablished populations in Mexico, Arizona, Colorado, Montana, South Dakota, Utah, and Wyoming. Onsite investigations by BLM did not identify any prairie dog towns in or near the proposed well. Suitable habitat is not present at the proposed well location.

Ute Ladies'-Tresses Orchid (Threatened)

Ute ladies'-tresses orchid (ULT) is listed as Threatened under the Endangered Species Act. It is extremely rare and occurs in moist, sub-irrigated or seasonally flooded soils at elevations between 1,780 and 6,800 feet above sea level. Habitat includes wet meadows, abandoned stream channels, valley bottoms, gravel bars, and near lakes or perennial streams that become inundated during large precipitation events. Suitable habitat is not present at the proposed well location.

Blowout Penstemon (Endangered)

On May 22, 2009 the Buffalo Field Office received a species list from the US Fish and Wildlife (USFWS) that included Blowout Penstemon. This plant occurs on sand dunes or blowouts. Suitable habitat is not present at the proposed well location.

Sensitive Species

BLM Wyoming has prepared a list of sensitive species to focus species management efforts towards maintaining habitats under a multiple use mandate. Two habitat types – prairie dog colonies and sagebrush ecosystems – are the most common within the Powder River Basin that contain habitat components required in the life cycle of several sensitive species. The species associated with these ecosystems are described below in general terms. Those species within the Powder River Basin that were once listed or candidates for listing under the Endangered Species Act of 1973 and remain BLM Wyoming sensitive species are also described in more detail in this section. The authority for this policy and guidance comes from the Endangered Species Act of 1973, as amended; Title II of the Sikes Act, as amended; the Federal Land Policy and Management Act (FLPMA) of 1976; and the Department Manual 235.1.1A.

Sagebrush obligates

Sagebrush ecosystems support a variety of species. Sagebrush obligates are animals that cannot survive without sagebrush and its associated perennial grasses and forbs; in other words, species requiring sagebrush for some part of their life cycle. Sagebrush obligates within the Powder River Basin, listed as sensitive species by BLM Wyoming include greater sage-grouse, Brewer's sparrow, sage thrasher, and sage sparrow. Sage sparrows, Brewer's sparrows, and sage thrashers all require sagebrush for nesting, with nests typically located within or under the sagebrush canopy. Sage thrashers usually nest in tall dense clumps of sagebrush within areas having some bare ground for foraging. Although no sage thrashers were seen in the project area, the habitat is suitable. Sage sparrows prefer large continuous stands of sagebrush and have not been confirmed nesting in the Powder River Basin. Brewer's sparrows are associated closely with sagebrush habitats having abundant scattered shrubs and short grass (Paige and Ritter 1999), they were documented at the proposed well location. Other sagebrush obligate species include sagebrush vole, pronghorn antelope, and sagebrush lizard.

Bald Eagle

On February 14, 1978, the bald eagle was federally listed as Endangered. On August 8, 2007, the bald eagle was removed from the Endangered Species list. The bald eagle remains under the protection of the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. In order to avoid violation of these laws and uphold the BLM's commitment to avoid any future listing of this species, all conservation measures and terms and conditions identified in the Powder River Basin Oil and Gas Project Biological Opinion (WY07F0075) (USFWS 2007) shall continue to be complied with.

Bald eagle nesting and roosting habitat is generally large mature trees. No suitable roosting or nesting substrate was identified by BLM within one mile of the proposed well.

Black-tailed prairie dog

No historic black-tailed prairie dog colonies were identified in the project area on the BLM database. 2006 aerial photography indicates a possible colony 0.25 miles to the north of the well location. No prairie dog towns were seen by BLM at the onsite.

Burrowing owl

The lack of prairie dog towns or other suitable burrows in the area make it unlikely any burrowing owl nests are within 0.25 miles of the project area.

Greater sage-grouse

Greater sage-grouse are found in prairie, sagebrush shrublands, other shrublands, wet meadows, and agricultural areas; they depend upon substantial sagebrush stands for nesting and winter survival (BLM 2003). The species is considered sensitive by BLM (Wyoming). In recent years, several petitions have been submitted to the USFWS to list greater sage-grouse as Threatened or Endangered. On January 12th, 2005, the USFWS issued a decision that the listing of the greater sage-grouse was “not warranted” following a Status Review. The decision document supporting this outcome noted the need to continue or expand all conservation efforts to conserve sage-grouse. In 2007, the U.S. District Court remanded that decision, stating that the USFWS’ decision-making process was flawed and ordered the USFWS to conduct a new Status Review as a result of a lawsuit and questions surrounding the 2005 review (Winmill Decision Case No. CV-06-277-E-BLW, December 2007).

In conformance with the PRB FEIS ROD the BFO has initiated actions within the analysis area in response to additional information regarding impacts to sage-grouse. These measures include:

1. Early initiation of a Resource Management Plan (RMP) revision, based on the evaluation of monitoring data generated under the mitigation monitoring and reporting plan (MMRP) in the PRB FEIS Record of Decision.
2. Establishment of sage-grouse “focus” areas, encompassing approximately 1 million acres of sage-grouse habitat. These areas are managed under strict guidelines designed to preserve sage-grouse habitat for development of alternatives during the RMP process.
3. Initiation of a population viability analysis in the Powder River Basin. This is a 24-month project involving the USGS, BLM Miles City Field Office, BLM Buffalo Field Office, and the University of Montana.
4. Development of alternatives that modify the proposed action to reflect the best available science in sage-grouse management.
5. Development of conditions of approval, specific to sage-grouse management, that incorporate some recommendations from recent research, the NE Local Sage-grouse Working Group, and the Petroleum Association of Wyoming.

The BFO has taken several steps to consider evolving information on impacts to sage-grouse which could result from development activities on Federal lands. With effective application of mitigating measures sage-grouse populations in the Powder River Basin will remain viable.

The 2003 PRB EIS has significance thresholds and population viability assumptions based on analysis that sufficient functioning habitat for sage grouse will remain to support population viability within the project area. In addition, the six areas identified as BFO sage-grouse focus areas assume that sufficient amounts of good quality sage-grouse habitat remain mostly unfragmented by energy or other man-made infrastructure; it is also assumed that the fragmented portions in the “energy areas” of sage-grouse habitat provide for the necessary breeding, feeding and sheltering components to sustain sage-grouse habitat connectivity between the six focus areas.

These basic management concepts assume sufficient “islands” of undisturbed (by human infrastructure) sage-grouse habitat would remain to sustain a large enough sage-grouse population for the long-term, and be surrounded by the planned major management activities (MMAs) in the PRB (for sage-grouse in the PRB, the MMA are livestock grazing and energy development). Research on sage-grouse in the PRB was initiated to determine what direct, indirect and cumulative impacts energy development would have on both sage-grouse habitat and its constituent resident population.

The proposed well is located 0.25 miles from three plugged oil and gas wells, and on an existing road. The habitat at the proposed well location is high quality when analyzed on a vegetative index with good sage brush canopy cover, interstitial residual grasses, and multiple forb species. Sage-grouse droppings were found at the proposed location, and nearby. BLM has established a ¼ mile controlled surface use (CSU) policy for sage grouse leks. The BLM project biologist walked all open areas within ¼ mile of the proposed well and did not find sage-grouse sign consistent with lekking activity. The Wyoming Game and Fish flew the area on May 11, 2009 and did not see any lekking birds within ¼ mile of the well. These survey efforts did not fulfill the Wyoming Game and Fish and BLM recommended protocol of three lek surveys at least one week apart and there is a small probability that a lek exists within ¼ mile of the proposed action.

The presence of the plugged oil wells, roads, and powerlines detract from the habitat value, however, based on the amount of sign seen at the proposed location the area is used by grouse. BLM records identified one sage-grouse lek, Boxelder, 1.3 miles from the proposed well. Leks within four miles of the proposed well are identified below (Table 3.5) The 4-mile distance was recommended by the State wildlife agencies' ad hoc committee for consideration of oil and gas development effects to nesting habitat (WGFD 2008).

Table 3.5 Sage-grouse leks within four miles from the Project area project boundary.

LEKID	QQ	Q	Sec	Twn	Rng	Easting	Northing	year	peak male	WY Game and Fish Category of impact
41-Boxelder Draw	SW	SW	33	52	69	487902	4920390	1981	30	
								1982	7	
								1986	21	
								1989	51	
								1992	24	
								1998	20	
								2002	17	
								2004	13	
								2007	13	Moderate

Sharp-tailed grouse

The most recent (2003) BLM and WGFD data base does not indicate any known occurrences of sharp-tailed grouse leks within 0.64 miles of the Project area. The project area is suitable sharp-tail grouse habitat and the species is expected to occur on site. No sharp-tailed grouse were observed by the BLM biologist within the project area.

Mountain plover

Mountain plovers require barren lands or very short (2-4 inch) vegetation. Ideal habitat for mountain

plover is large active prairie dog towns. A BLM mountain plover habitat suitability model indicates that the proposed well location is suitable. However, based on the onsite visit, the project area is not considered suitable mountain plover habitat due to the dominance of tall sage brush and grasses.

ENVIRONMENTAL CONSEQUENCES

No Action

No impacts will occur if the no action alternative were to be selected and implemented.

Proposed Action

The environmental consequences of the proposed action are described below.

Vegetation & Soils

Soils

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

- Modification of hill slope hydrology.
- Mixing of horizons which occur where construction on roads, pipelines or other activities take place. Mixing may result in removal or relocation of organic matter and nutrients to depths where it would be unavailable for vegetative use. Soils which are more susceptible to wind and water erosion may be moved to the surface. Soil structure may be destroyed, which may impact infiltration rates. Less desirable inorganic compounds such as carbonates, salts or weathered materials may be relocated and have a negative impact on re-vegetated areas. 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 is the collapse of soil pores resulting 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.
- 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.

Vegetation

Impacts to vegetation and soils from surface disturbance will be reduced by following the operator's plans and BLM applied mitigation. Construction of the well pads, engineered road section, spot upgrades to existing primitive roads as well as road improvements would result in the loss of both native and non-native vegetation, and increased erosion potential within the project area. Expedient reclamation of disturbed land with stockpiled topsoil, proper seedbed preparation techniques, and appropriate seed mixes, along with utilization of erosion control measures (e.g., waterbars, water wings, culverts, rip-rap, gabions etc.) would ensure that land productivity/stability is regained and maximized.

The entire impacted area will be ultimately reclaimed as described in the surface use plan and attached conditions of approval following plugging and abandonment of the well, access road and associated disturbed lands. If production is established on these locations, all disturbed areas not needed for production purposes will be expediently recontoured and reclaimed

Cultural Resources

There are no eligible sites within the APE of the proposed project. Following the Wyoming State Protocol Section VI (A)(1) the Bureau of Land Management notified the Wyoming State Historic Preservation Officer (SHPO) on 02/02/2009 that no historic properties exist within the APE.

Invasive Species

Based on the investigations performed during the project planning process, the operator has committed to the control of noxious weeds and species of concern. Weeds will be controlled on disturbed areas within the exterior limits of the access road and well pad. The control methods shall be in accordance with guidelines established by the EPA, BLM, State, and local authorities.

These impacts, singly or in combination, would 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. Soil disturbances other than permanent facilities could be short term, and may have minor impacts with expedient, successful interim reclamation and site stabilization. Construction activities should be designed following Best Management Practices (BMPs), seed mixes were determined based on soil map unit types and dominant ecological sites found within the project area.

Water Resources

Watershed values, including natural drainages, would not be adversely impacted by the proposal with properly applied mitigation. Other water resources will not be adversely impacted by the proposal. Possible contamination effects of fresh water aquifers will be reduced through the use of tested casing, by setting casing at appropriate depths and by following safe repair procedures in the event of casing failure. Other downhole well operations are expected to cause minimal impacts using standard engineering practices. No adverse impacts are expected to water resources, therefore water resources will not be considered further in this EA.

Wildlife

Effects Analysis

During the environmental analysis process, the BLM identified project modifications resulting in an environmentally preferred alternative. At the on-sites, all areas of proposed surface disturbance were inspected to ensure that potential impacts to natural resources would be reduced.

Big Game Direct and Indirect Effects

Under the environmentally preferred alternative, Winter-Yearlong range for pronghorn antelope will be impacted with the construction of the well. Short-term disturbances (pipeline for example) should provide some habitat value as these areas are reclaimed and native vegetation becomes established.

In addition to the direct habitat loss, big game would likely be displaced from the project area during drilling and construction. A study in central Wyoming reported that mineral drilling activities displaced mule deer by more than 0.5 miles (Hiatt and Baker 1981). The WGFD indicates a well density of eight wells per section creates a high level of impact for big game and that avoidance zones around mineral facilities overlap creating contiguous avoidance areas (WGFD 2004). A multi-year study on the Pinedale Anticline suggests not only do mule deer avoid mineral activities, but after three years of drilling activity the deer have not become accustomed to the disturbance (Madson 2005).

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

Winter big game diets are sub-maintenance, meaning animals lose weight and body condition as the winter progresses. Survival below the maintenance level requires behavior that emphasizes energy conservation. Canfield et al. (1999) pointed out that forced activity caused by human disturbance exacts an energetic disadvantage, while inactivity provides an energetic advantage for animals. Geist (1978) further defined effects of human disturbance in terms of increased metabolism, which could result in illness, decreased reproduction, and even death.

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

Big Game Cumulative effects

The cumulative effects associated with Alternative C are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, please refer to the referenced PRB FEIS, Volume 2, Chapter 4, page 4-211.

Aquatics Direct and Indirect Effects

If the well is a producer and there is a need for water management, the operator will sundry a water management plan to the BLM. At this time there are no anticipated effects to aquatic species.

Aquatics Cumulative effects

The cumulative effects associated with Alternative C are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, please refer to the referenced PRB FEIS, Volume 2, Chapter 4, page 4-247.

Migratory Birds Direct and Indirect Effects

Disturbance of the habitat types within the project area is likely to impact migratory birds. Native habitats are being lost directly with the construction of wells, roads, and pipelines. Prompt re-vegetation of short-term disturbance areas should reduce habitat loss impacts. Human activities likely displace migratory birds farther than simply the physical habitat disturbance. Drilling and construction noise can be troublesome for songbirds by interfering with ability to attract mates, defend territories, recognize calls from conspecifics, and hear predators (BLM 2003).

Habitat fragmentation results in more than just a quantitative loss in the total area of habitat available; the remaining habitat area is also qualitatively altered (Temple and Wilcox 1986). Ingelfinger (2004) identified that the density of breeding Brewer’s sparrows declined by 36% and breeding sage sparrows declined by 57% within 100 m of dirt roads within a natural gas field. Effects occurred along roads with

light traffic volume (<12 vehicles per day). The increasing density of roads constructed in developing natural gas fields exacerbated the problem creating substantial areas of impact where indirect habitat losses (displacement) were much greater than the direct physical habitat losses.

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

Nesting migratory bird species are vulnerable to the same affects as sage-grouse and raptor species. Though no timing restrictions are typically applied specifically to protect migratory bird breeding or nesting, where sage-grouse or raptor nesting timing limitations are applied (in this case sage-grouse) nesting migratory birds are also protected. Where these timing limitations are not applied and migratory bird species are nesting, migratory birds remain vulnerable. Additional direct and indirect effects to migratory birds are discussed in the PRB FEIS (4-231-235).

Migratory Birds Cumulative effects

The cumulative effects associated with Alternative C are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, please refer to the referenced PRB FEIS, Volume 2, Chapter 4, Page 4-235.

Raptors Direct and Indirect Effects

There are no anticipated effects to nesting raptors. No nests were identified within 0.5 miles of the proposed well location.

Raptor Cumulative Effects

The cumulative effects associated with Alternative C are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, please refer to the referenced PRB FEIS, Volume 2, Chapter 4, page 4-221.

Threatened and Endangered and Sensitive Species

Potential project effects on Threatened and Endangered Species were analyzed and a summary is provided in Table 4.2. Threatened and Endangered Species potentially affected by the proposed project area are further discussed following the table.

Threatened and Endangered Species

Table 4.2 Summary of Threatened and Endangered Species Habitat and Project Effects.

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
Endangered				
Black-footed ferret (<i>Mustela nigripes</i>)	Black-tailed prairie dog colonies or complexes > 1,000 acres.	NP	NE	Suitable habitat of insufficient size.
Blowout penstemon (<i>Penstemon haydenii</i>)	Unstable, sandy blow-outs and active sand dunes	NP	NE	Suitable habitat is not present.
Threatened				
Ute ladies'-tresses orchid (<i>Spiranthes diluvialis</i>)	Riparian areas with permanent water	NP	NE	Suitable habitat is not present.

Presence

K Known, documented observation within project area.

S Habitat suitable and species suspected, to occur within the project area.

NS Habitat suitable but species is not suspected to occur within the project area.

NP Habitat not present and species unlikely to occur within the project area.

Project Effects

LAA Likely to adversely affect

NE No Effect.

NLAA May Affect, not likely to adversely affect individuals or habitat.

Sensitive Species Direct and Indirect Effects

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

Sagebrush obligates

Shrubland and grassland birds are declining faster than any other group of species in North America (Knick et al. 2003). In Wyoming, existing oil and gas wells are located primarily in landscapes dominated by sagebrush, causing direct loss of this habitat. Associated road networks, pipelines, and powerline transmission corridors also influence vegetation dynamics by fragmenting habitats or by creating soil conditions facilitating the spread of invasive species (Braun 1998, Gelbard and Belnap 2003). Density of sagebrush-obligate birds within 100 m of roads constructed for natural gas development in Wyoming was 50% lower than at greater distances (Ingelfinger 2001). Increased numbers of corvids and raptors associated with powerlines (Steenhof et al. 1993, Knight and Kawashima 1993, Vander Haegen et al. 2002) increases the potential predation impact on sage-grouse and other sagebrush-breeding birds (Knick et al. 2003).

Fragmentation of shrubsteppe habitat is a major disruption that has consequences for sagebrush-obligate species (Braun et al. 1976; Rotenberry & Wiens 1980a). In fragmented habitats, suitable habitat area remains only as remnants surrounded by unusable environments (Urban and Shugart 1984; Fahrig & Paloheimo 1988). Populations of sagebrush-obligate species decline because areas of suitable habitat

decrease (Temple & Cary 1988), because of lower reproduction, and/or because of higher mortality in remaining habitats (Robinson 1992; Porneluzi et al. 1993). Fragmentation of shrubsteppe has the further potential to affect the conservation of shrub-obligate species because of the permanence of disturbance (Knick and Rotenberry 1995). Several decades are required to reestablish ecologically functioning mature sagebrush communities. Due to this, sagebrush obligate species may not return even after habitat reestablishment.

Table 4.3 Summary of Sensitive Species Habitat and Project Effects.

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
Amphibians				
Northern leopard frog (<i>Lithobates pipiens</i>)	Beaver ponds, permanent water in plains and foothills	NP	NI	No surface water impacts.
Spotted frog (<i>Ranus pretiosa</i>)	Mountain ponds, sloughs, small streams	NP	NI	Prairie not mountain habitat.
Birds				
Baird's sparrow (<i>Ammodramus bairdii</i>)	Grasslands, weedy fields	S	MIH	Sagebrush cover will be affected.
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Mature forest cover often within one mile of large water body.	S	NI	Bald eagle may forage in the area.
Brewer's sparrow (<i>Spizella breweri</i>)	Basin-prairie shrub	K	MIH	Sagebrush cover will be affected.
Burrowing owl (<i>Athene cunicularia</i>)	Grasslands, basin-prairie shrub	NP	NI	No prairie dog towns impacted.
Ferruginous hawk (<i>Buteo regalis</i>)	Basin-prairie shrub, grasslands, rock outcrops	NP	NI	Not occupied habitat.
Greater sage-grouse (<i>Centrocercus urophasianus</i>)	Basin-prairie shrub, mountain-foothill shrub	K	WIPV	Sagebrush cover with documented use will be affected.
Loggerhead shrike (<i>Lanius ludovicianus</i>)	Basin-prairie shrub, mountain-foothill shrub	S	MIH	Sagebrush cover will be affected.
Long-billed curlew (<i>Numenius americanus</i>)	Grasslands, plains, foothills, wet meadows	NP	NI	Habitat not present.
Mountain plover (<i>Charadrius montanus</i>)	Short-grass prairie with slopes < 5%	NP	NI	Habitat not present.
Northern goshawk (<i>Accipiter gentilis</i>)	Conifer and deciduous forests	NP	NI	No forest habitat present.
Peregrine falcon (<i>Falco peregrinus</i>)	cliffs	NP	NI	No nesting habitat present.
Sage sparrow (<i>Amphispiza billneata</i>)	Basin-prairie shrub, mountain-foothill shrub	NP	NI	Species has not been documented in the Buffalo Field office area.
Sage thrasher	Basin-prairie shrub, mountain-foothill shrub	S	MIH	Sagebrush cover will be

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
(<i>Oreoscoptes montanus</i>) Trumpeter swan	Lakes, ponds, rivers	NP	NI	affected. Reservoirs may provide migratory habitat.
(<i>Cygnus buccinator</i>) White-faced ibis	Marshes, wet meadows	NP	NI	Permanently wet meadows not present.
(<i>Plegadis chihi</i>) Yellow-billed cuckoo	Open woodlands, streamside willow and alder groves	NP	NI	Streamside habitats not present
(<i>Coccyzus americanus</i>)				
Fish				
Yellowstone cutthroat trout (<i>Oncorhynchus clarki bouvieri</i>)	Mountain streams and rivers in Tongue River drainage	NP	NI	Outside species range.
Mammals				
Black-tailed prairie dog (<i>Cynomys ludovicianus</i>)	Prairie habitats with deep, firm soils and slopes less than 10 degrees.	NP	NI	No Prairie dog towns found.
Fringed myotis (<i>Myotis thysanodes</i>)	Conifer forests, woodland chaparral, caves and mines	NP	NI	Habitat not present.
Long-eared myotis (<i>Myotis evotis</i>)	Conifer and deciduous forest, caves and mines	NP	NI	Habitat not present.
Spotted bat (<i>Euderma maculatum</i>)	Cliffs over perennial water.	NP	NI	Cliffs & perennial water not present.
Swift fox (<i>Vulpes velox</i>)	Grasslands	S	MIH	Project may alter foraging habitat.
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	Caves and mines.	NP	NI	Habitat not present.
Plants				
Porter's sagebrush (<i>Artemisia porteri</i>)	Sparsely vegetated badlands of ashy or tufaceous mudstone and clay slopes 5300-6500 ft.	NP	NI	Habitat not present.
William's wafer parsnip (<i>Cymopterus williamsii</i>)	Open ridgetops and upper slopes with exposed limestone outcrops or rockslides, 6000-8300 ft.	NP	NI	Habitat not present.

Presence

K Known, documented observation within project area.

S Habitat suitable and species suspected, to occur within the project area.

NS Habitat suitable but species is not suspected to occur within the project area.

NP Habitat not present and species unlikely to occur within the project area.

Project Effects

NI No Impact.

MIH May Impact Individuals or Habitat, but will not likely contribute to a trend towards Federal listing or a loss of viability to the population or species.

WIPV Will Impact Individuals or Habitat with a consequence that the action may contribute to a trend towards Federal listing or cause a loss of viability to the population or species.

BI Beneficial Impact

Bald eagle Direct and Indirect Effects

Based on the BLM biologist habitat assessment, it is unlikely bald eagles nest or roost within one mile of the project area.

Grouse

Greater sage-grouse Direct and Indirect Effects

The proposed well is located adjacent to a plugged (but not abandoned) oil and gas well, between two gravel roads, and within 100 yards of a power line. The habitat on-site is high quality when analyzed on a vegetative index with good sage brush canopy cover (15 to 30 %), interstitial residual grasses, and multiple forb species. The presence of the plugged oil well, roads, and existing powerlines detract from the habitat value, however based on the amount of sign seen at the proposed location the area is used by grouse. Drilling and operation of the well will remove nesting, brood rearing, and roosting habitat. Approximately 2.2 acres of sage-grouse habitat will be physically removed by the proposed project.

The Powder River Basin Oil and Gas Project FEIS prohibits surface disturbing activities within 2 miles of leks. One active lek, Boxelder Draw, is within four miles (1.3 miles north) of the proposed well. A timing limitation prohibiting surface disturbance from March 1-June 15 will be applied to minimize noise and habitat removal during the nesting season. Based on the best available science, which is summarized in the next section, the proposed action may contribute to the decline or extirpation of the local sage-grouse population.

Greater sage-grouse Cumulative Effects

The Powder River Basin Oil and Gas Project FEIS (BLM 2003) concluded that “Activities associated with the proposed project would affect sage-grouse in several ways. These effects may include: (1) increased direct mortality (including legal hunting, poaching, and collision with power lines and vehicles); (2) the introduction of new perches for raptors and thus the potential change in rate of predation; (3) direct loss or degradation of habitats; (4) indirect disturbance resulting from human activity (including harassment, displacement, and noise); (5) habitat fragmentation (particularly through construction of roads); and (6) changes in population (pg. 4-257).” The FEIS goes on to state that “implementation of several mitigation measures would reduce the extent of each impact addressed by those measures. Despite these measures, the synergistic effect of several impacts would likely result in a downward trend for the sage-grouse population, and may contribute to the array of cumulative effects that may lead to its federal listing. Local populations may be extirpated in areas of concentrated development, but viability across the Project Area (Powder River Basin) or the entire range of the species is not likely to be compromised (pg. 4-270).”

The Powder River Basin Oil and Gas Project Record of Decision (BLM 2003) included a Mitigation Monitoring and Reporting Plan (MMRP). The uncertainties as to where and at what level development was to proceed, as well as the uncertainties associated with the assumptions that were used to predict impacts, suggests that the one-time determination of impacts that is included in the EIS may not occur as projected. The MMRP helps to continually assess the effects of the project and the adequacy of the mitigation. Such a plan/process provides a mechanism to continuously modify management practices in order to allow development, while continuing to protect the environment (E-1).” In other words, development pace and patterns may not occur as predicted, and so the BLM may use the adaptive management process provided for in the BFO RMP.

Impacts from energy development are likely to be significant and additive to the long-term impacts afflicting the sage-grouse population (WGFD 2004). Greater sage-grouse habitat is being directly lost with the addition of well sites, roads, pipelines, powerlines, reservoirs, and other infrastructure in the

Powder River Basin (WGFD 2005, WGFD 2004). Sage-grouse avoidance of infrastructure results in even greater indirect habitat loss. In southwestern Wyoming, yearling female greater sage-grouse avoid nesting in areas within 0.6 miles of producing well pads (Holloran et al. 2007), and in southern Alberta, brood-rearing females avoid areas within 0.6 miles of producing wells (Aldridge and Boyce 2007). Doherty et al. (2008) demonstrated that sage-grouse in the Powder River Basin avoided otherwise suitable wintering habitats once they have been developed for Coal Bed Natural Gas production, even after timing and lek buffer stipulations had been applied. The WGFD feels a well density of eight wells per section creates an extreme level of impact for sage-grouse and that sage-grouse avoidance zones around mineral facilities overlap, creating contiguous avoidance areas (WGFD 2004). As interpreted by coordinated effort with state fish and wildlife agencies from Montana, Colorado, Utah, South Dakota, North Dakota and

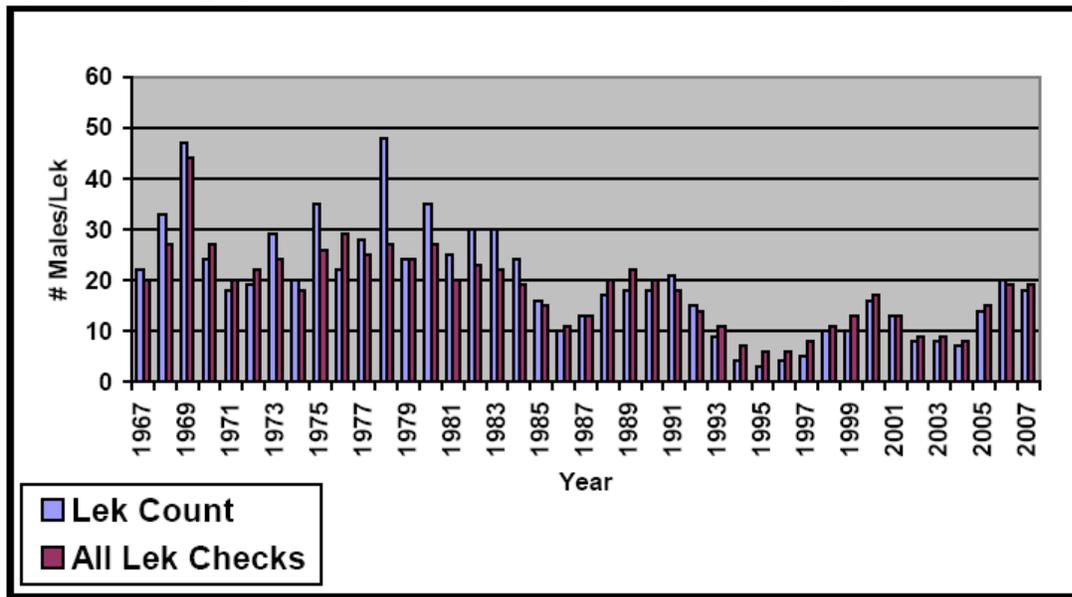
Wyoming, (State wildlife agencies' ad hoc committee for sage-grouse and oil and gas development 2008), research indicates that oil or gas development exceeding approximately 1 well pad per square mile, with the associated infrastructure, results in calculable impacts on breeding populations, as measured by the number of male sage-grouse attending leks (Holloran 2005, Walker et al. 2007).

Noise can affect sage-grouse by preventing vocalizations that influence reproduction and other behaviors (WGFD 2003). In a study of greater sage-grouse population response to natural gas field development in western Wyoming, Holloran (2005) concluded that increased noise intensity, associated with active drilling rigs within 5 km (3.1 miles) of leks, negatively influenced male lek attendance. In 2002, Braun et al. documented approximately 200 CBNG facilities within one mile of sage-grouse leks. Sage-grouse numbers were found to be consistently lower for these leks than for leks without this disturbance. Direct habitat losses from the facilities themselves, roads and traffic, and the associated noise were found to be the likely reason for this finding.

Vegetation communities within the Powder River Basin are naturally fragmented, as they represent a transition between the intermountain basin sagebrush communities to the west and the prairie communities to the east. The Powder River Basin is also near the eastern edge of greater sage-grouse range. A sagebrush cover assessment within Wyoming basins estimated sagebrush coverage within the Powder River Basin to be 35% with an average patch size less than 300 acres (Rowland et al. 2005). The Powder River Basin patch size has decreased by more than 63% in the past forty years, from 820 acre patches and an overall coverage of 41% in 1964 (Rowland et al. 2005). The existing development within the cumulative impacts assessment area has further fragmented the sage-grouse habitat. Disturbance created by this project will contribute to additional fragmentation.

The sage-grouse population within northeast Wyoming is exhibiting a steady long term downward trend (Figure 1) (WGFD 2005). The figure illustrates a ten-year cycle of periodic highs and lows. Each subsequent population peak is lower than the previous peak. Long-term harvest trends are similar to that of lek attendance (WGFD 2005).

Figure 1. Male sage-grouse lek attendance within northeastern Wyoming, 1967-2007.



The BFO Resource Management Plan (BLM 2001) and the Powder River Basin Oil and Gas Project Record of Decision (BLM 2003) include a two-mile timing limitation within sage-grouse nesting habitat. The two-mile measure originated with the Western Association of Fish and Wildlife Agencies (WAFWA) (BLM 2004). BLM Wyoming adopted the two-mile recommendation in 1990 (BLM 1990). The two-mile recommendation was based on early research which indicated between 59 and 87 percent of sage-grouse nests were located within two miles of a lek (BLM 2004). These studies were conducted within prime, contiguous sage-grouse habitat such as Idaho’s Snake River plain.

Additional studies, across more of the sage-grouse’s range, indicate that many populations nest much farther than two miles from the breeding lek (BLM 2004). Holloran and Anderson (2005), in their Upper Green River Basin study area, reported only 45% of their sage-grouse hens nested within 3 km (1.86 mi) of the capture lek. Moynahan and Lindberg (2004) found only 36% of their grouse nesting within 3 km of the capture lek. Moynahan’s study area was north-central Montana in an area of mixed-grass prairie and sagebrush steppe, with Wyoming big sagebrush (*Artemisia tridentata wyomingensis*) being the dominant shrub species (Moynahan et al. 2007). Habitat conditions and sage-grouse biology within the Buffalo Field Office are more similar to Moynahan’s north-central Montana study area than the Upper Green River area.

Based on these studies, the BLM has determined that a two-mile timing limitation applied to Coal Bed Natural gas development, given the long-term population decline and that less than 50% of sage-grouse are expected to nest within the 2-mile area, is insufficient to reverse the population decline. Moynahan and Lindberg (2004) like WAFWA (Connelly et al. 2000), recommend increasing the protective distance around sage-grouse leks. The BLM and University of Montana are currently researching nest location and other sage-grouse questions and relationships between grouse and coalbed natural gas development. Thus far, this research suggests that impacts to leks from energy development are discernable out to a minimum of four miles, and that some leks within this radius have been extirpated as a direct result of energy development (State wildlife agencies' ad hoc committee for sage-grouse and oil and gas development 2008). Even with a timing limitation on construction activities, sage-grouse may avoid nesting within

developed fields because of the activities associated with operation and production. In a typical landscape in the Powder River Basin, energy development within two miles of leks is projected to reduce the average probability of lek persistence from 87% to 5% percent (Walker et al. 2007).

Rather than limiting mitigation to only timing restrictions, research suggests more effective mitigation strategies include, at a minimum, burying power lines (Connelly et al. 2000 b); minimizing road and well pad construction, vehicle traffic, and industrial noise (Lyon and Anderson 2003, Holloran 2005); and managing produced water to prevent the spread of mosquitoes with the potential to vector West Nile Virus in sage grouse habitat (Walker et al 2007).

The multi-state recommendations presented to the WGFD for identification of core sage grouse areas acknowledges there may be times when development in important sage grouse breeding, summer, and winter habitats cannot be avoided. In those instances they recommend, "...infrastructure should be minimized and the area should be managed in a manner that effectively conserves sagebrush habitats (State wildlife agencies' ad hoc committee for sage-grouse and oil and gas development 2008).

In January 2008, BFO staff identified that sage-grouse protections in the 2003 PRB EIS may not be adequate to preserve sage-grouse population viability in the Powder River Basin. BFO consolidated research and data to identify high-quality sage-grouse habitat in the basin and developed a map of sage-grouse "focus areas". These areas encompass approximately 1 million acres of habitat, and are managed under criteria established in "Guidance for general management actions during BFO Resource Management Plan Revision" (Appendix 1). This general guidance includes the following requirement; "The proponent will be asked to demonstrate that the proposal can be managed in a manner that effectively conserves sage-grouse habitats affected by the proposal."

Based on the best available science presented above, the proposed action may contribute to the abandonment of the Boxelder lek. However, given the ongoing planning actions specific to sage-grouse, changes to the proposed action identified, and timing limitations applied, the proposed action should not affect population viability across the project area or the species' range. Continuing to permit oil wells in occupied sage-grouse habitat, when feasible alternatives that would conserve the occupied habitat are available, increases the probability that populations will continue to decline.

Sensitive Species Cumulative effects

The cumulative effects associated with Alternative C are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, please refer to the referenced PRB FEIS, Volume 2, Chapter 4, page 4-271.

West Nile Virus Direct and Indirect Effects

This project is likely to result in standing surface water which may increase *Culex tarsalis* breeding habitat. BLM has consulted with applicable state agencies, County Weed and Pest and the State Health Department, per above mitigation in the PRB ROD page 18, regarding the disease and the need to treat. BLM has also consulted with the researchers that are studying the dynamics of WNV species and its effects in Wyoming.

There is no evidence that treatment, either through the use of larvicides or malithion, on a site specific or basin-wide scale will have any effect on the overall spread of WNV. The State agencies have not instituted state-wide treatment for mosquitoes due to WNV, nor are they requiring any mitigation specific to permitting for CBM operations.

Cumulatively, there are many sources of standing water, beyond CBM discharge, throughout the PRB that would add to the potential for mosquito habitat. Sources include; natural flows, livestock watering facilities, coal mining operations, and outdoor water use and features in and around communities. BLM will keep monitoring this issue by continuing to consult with the State agencies and the researchers working in the area in order to stay abreast of the most current developments and any need to apply mitigation.

Cumulative Impact Analysis

The cumulative impacts of the proposed action, when considered with other existing and proposed development in the area, are not significant. The application of mitigative measures will ensure that the incremental impacts of these wells, when considered with any existing development are insignificant. For a complete description of cumulative impacts, please refer to the PRB Final EIS Volume 2, Chapter 4, pages 4-1 through 4-364.

Description of Proposed Mitigation Measures (applied as Conditions of Approval):

Implementation of committed mitigation measures contained in the Surface Use Plan of Operations and Drilling Plans, in addition to the following Conditions-of-Approval, would ensure that no significant adverse environmental impacts would result from approval of the proposed action:

Site Specific Conditions of Approval

Please contact Meleah Corey – Natural Resource Specialist, at (307) 684-1070, Bureau of Land Management, Buffalo, if there are any questions concerning COAs.

A. General

1. All changes made at the onsite will be followed. They have all been incorporated into the operator's plan of development.
2. All proposed access roads and pads where engineered construction will occur will be slope staked prior to construction
3. If any cultural values [sites, artifacts, human remains (Appendix L FEIS)] are observed during operation of this lease/permit/right-of-way, they will be left intact and the Buffalo Field Manager notified. The authorized officer will conduct an evaluation of the cultural values to establish appropriate mitigation, salvage or treatment. The operator is responsible for informing all persons in the area who are associated with this project that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are uncovered during construction, the operator is to immediately stop work that might further disturb such materials, and contact the authorized BLM officer (AO). Within five working days the AO will inform the operator as to:
 - whether the materials appear eligible for the National Register of Historic Places;
 - the mitigation measures the operator will likely have to undertake before the site can be used (assuming in situ preservation is not necessary); and,
 - a time-frame for the AO to complete an expedited review under 36 CFR 800.11 to confirm, through the State Historic Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO

that the required mitigation has been completed, the operator will then be allowed to resume construction measures.

B. Surface Use

1. All permanent above-ground structures (e.g., production equipment, tanks, etc.) not subject to safety requirements will be painted to blend with the natural color of the landscape. The paint used will be a color which simulates “Standard Environmental Colors.” The color selected for the Wild West Unit #3H well is Shale Green.
2. The culvert locations will be staked prior to construction. The culvert invert grade and finished road grade will be clearly indicated on the stakes. Culverts will be installed on natural ground, or on a designed flow line of a ditch. The minimum cover over culverts will be 12” or one-half the diameter whichever is greater. Drainage laterals in the form of culverts or water bars shall be placed according to the following spacing:

Grade	Drainage Spacing
2-4%	310 ft
5-8%	260 ft
9-12%	200 ft

3. All rills, gullies, and other surface defects shall be ripped to the full depth of erosion across the entire width of the roadway prior to final grading and surfacing.
4. The operator is responsible for having the licensed professional engineer certify that the actual construction of the road meets the design criteria and is constructed to Bureau standards.
5. Reserve pit will be closed as soon as possible, but no later than 1 year from time of drilling/well completion, unless the BLM Authorized Officer gives an extension. Squeezing of pit fluids and cuttings is prohibited. Pits must be dry of fluids or they must be removed via vac-truck or other environmentally acceptable method prior to backfilling, re-contouring and replacement of topsoil. Mud and cuttings left in pit must be buried at least 3-feet below re-contoured grade. The operator will be responsible for re-contouring any subsidence areas that develop from closing a pit before it is sufficiently dry.
6. Adequate drainage control must be in place at all stages of construction and culverts installed as soon as feasible.
7. If a dry hole, all rehabilitation work, including seeding, will be initiated within **30 days** after plugging operations are completed (pending seasonal conditions).
8. Interim Reclamation of disturbed areas will adhere to the following guidance (as per the Wyoming Policy on Reclamation (IM WY-90-231):

- A. The reclaimed area shall be stable and exhibit none of the following characteristics:
 - 1. Large rills or gullies.
 - 2. Perceptible soil movement or head cutting in drainages.
 - 3. Slope instability on, or adjacent to, the reclaimed area in question.
 - B. The soil surface must be stable and have adequate surface roughness to reduce runoff and capture rainfall and snow melt. Additional short-term measures, such as the application of mulch, shall be used to reduce surface soil movement.
 - C. Vegetation canopy cover (on unforested sites), production and species diversity (including shrubs) shall approximate the surrounding undisturbed area. The vegetation shall stabilize the site and support the planned post disturbance land use, provide for natural plant community succession and development, and be capable of renewing itself.
 - D. This shall be demonstrated by: Successful onsite establishment of species included in the planting mixture or other desirable species. Evidence of vegetation reproduction, either spreading by rhizomatous species or seed production.
 - E. The reclaimed landscape shall have characteristics that approximate the visual quality of the adjacent area with regard to location, scale, shape, color and orientation of major landscape features and meet the needs of the planned post disturbance land use.
9. All topsoil removed during construction activities will be respread for interim reclamation success.
10. Surface-disturbing activities (construction and drilling) will be restricted during sage-grouse breeding and nesting periods (March 1 to June 15).
11. The operator will drill seed on the contour to a depth of 0.5 inch, followed by cultipaction to compact the seedbed, preventing soil and seed losses. To maintain quality and purity, the current years tested, certified seed with a minimum germination rate of 80% and a minimum purity of 90% will be used. On BLM surface or in lieu of a different specific mix desired by the surface owner, use the following:

**10-14" Precipitation Zone
Loamy Ecological Site**

Seed Mix

Species		% in Mix	Lbs PLS*
<i>Western Wheatgrass</i> (Pascopyrum smithii)		40	4.8
<i>Bluebunch Wheatgrass</i> (Pseudoroegneria spicata ssp. Spicata)		10	1.2
<i>Green needlegrass</i> (Nassella viridula)		25	3.0
<i>Thickspike Wheatgrass</i> (Elymus lanceolatus ssp. lanceolatus)		10	1.2

Species		% in Mix	Lbs PLS*
<i>Prairie coneflower</i> (Ratibida columnifera)		5	0.6
<i>White or purple prairie clover</i> (Dalea candidum, purpureum)		5	0.6
<i>Rocky Mountain beeplant</i> (Cleome serrulata) /or <i>American vetch</i> (Vicia		5	0.6
Totals		100%	12 lbs/acre

*PLS = pure live seed. Northern Plains adapted species. Slopes too steep for machinery may be hand broadcast and raked with twice the specified amount of seed. Complete fall seeding after September 15 and prior to prolonged ground frost. To be effective, complete spring seeding after the frost has left the ground and prior to May 15.

This is a recommended seed mix based on the native plant species listed in the NRCS Ecological Site descriptions, U.W. College of Ag., and seed market availability. A site-specific inventory will allow the resource specialist to suggest the most appropriate species, percent composition, and seeding rate for reclamation purposes.

Sage-grouse

1. Surface disturbing activities (Construction, drilling, reclamation) will be prohibited from 1 March to 15 June for the life of the project.
2. For any surface-disturbing activities proposed in sagebrush shrublands, the operator will conduct clearance surveys for sage grouse breeding activity during the sage grouse's breeding season before initiating the activities. The surveys must encompass all sagebrush shrublands within 0.5 mile of the proposed activities.

Raptors

The following conditions will alleviate impacts to raptors:

3. No surface disturbing activity shall occur from February 1 through July 31, annually, prior to a raptor nest survey for the current breeding season.
4. Surveys to document nest occupancy shall be conducted by a biologist following BLM protocol, between April 15 and June 30. All survey results shall be submitted in writing to a Buffalo BLM biologist and approved prior to surface disturbing activities. Surveys outside this window may not depict nesting activity. If a survey identifies active raptor nests, a 0.5 mile timing buffer will be implemented. The timing buffer restricts surface disturbing activities within 0.5 mile of occupied raptor nests from February 1 to July 31.
5. If an undocumented raptor nest is located during project construction or operation, the Buffalo Field Office (307-684-1100) shall be notified within 24 hours.
6. Well metering, maintenance and other site visits within 0.5 miles of raptor nests should be minimized as much as possible during the breeding season (February 1 – July 31).

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WYNDD 2008 , PRE-DRILLING SURVEYS OF AMPHIBIAN AND REPTILE HABITATS IN THE POWDER RIVER BASIN OF WYOMING YEAR ONE PROJECT.

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