

EA NO-WY-070-09-155
FINDING OF NO SIGNIFICANT IMPACT & DECISION RECORD
FOR
EOG Resources INC

DECISION: It is my decision to authorize the following Application for Permit to Drill (APD) for EOG Resources INC:

Well Name & Number	QTR	Sec.	T	R	Lease #
Crossbow 5-18H	NWNE	18	41N	71W	WYW-108556
Crossbow 6-18M	SENE	18	41N	71W	WYW-108556
Crossbow 19-18H	NWNE	18	41N	71W	WYW-108556

This approval is subject to adherence with operating plans and mitigation measures contained in the Surface Use Plan of Operations and Drilling Plan 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.

ACTING Paul Beets
 Field Manager

9/18/09
 Date

**BUREAU OF LAND MANAGEMENT
BUFFALO FIELD OFFICE
ENVIRONMENTAL ASSESSMENT
EA # WY-070-09-155**

PROJECT NAME: Crossbow 5-18H, 6-18M, and 19-18H Wells

WELL NAME/#/LEASE/LOCATION:

Well Name & Number	QTR	Sec.	T	R	Lease #
Crossbow 5-18H	NWNE	18	41N	71W	WYW-108556
Crossbow 6-18M	SENE	18	41N	71W	WYW-108556
Crossbow 19-18H	NWNE	18	41N	71W	WYW-108556

OPERATOR/APPLICANT: EOG Resources, Inc.

AFFECTED SURFACE OWNERS: Isenberger Land, LLC

COUNTY: Campbell

INTRODUCTION: This site-specific analysis tiers onto 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 purpose of the proposed action is to explore for oil and gas reserves. The APDs were submitted by private industry for development of oil and gas on valid federal oil and gas leases issued to the applicant by the BLM.

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

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

No Action

This alternative will consist of no new federal wells. The Department of Interior's authority to implement a "no action" alternative that precludes development is limited. 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." The No Action Alternative is further described in the PRB FEIS, Volume 1, pages 2-54 through 2-62.

Proposed Action

The Crossbow wells are located as follows:

Well Name & Number	QTR	Sec.	T	R	Lease #
Crossbow 5-18H	NWNE	18	41N	71W	WYW-108556
Crossbow 6-18M	SENE	18	41N	71W	WYW-108556
Crossbow 19-18H	NWNE	18	41N	71W	WYW-108556

Figure 1 shows a map of the proposed action. The proposed action is to horizontally drill one conventional oil well to the Mowry formation (approximately 11,090 total vertical depth [TVD]; total well bore length 15,522 feet); and one conventional oil well to the Niobrara formation (approximately 13,968 feet TVD; total well bore length 15,522 feet). In addition, one monitoring well will be vertically drilled to a total depth of 11,500 feet to monitor the hydraulic fracturing activity of the Crossbow 5-18H well. The Crossbow 5-18H and 19-18H wells are located on an existing well pad previously used to drill the Crossbow 2-18H well (previously permitted and drilled).

The proposed action involves:

Activity	Length (feet)	Width (feet)	Acres of New Disturbance
Crossbow 5-18H and 19-18H Well Pad Expansion (Cuts/Fills/Stockpiles)	400	16	0.12
Crossbow 5-18H and 19-18H Access Road	0	0	0
Crossbow 6-18M Well Pad	400	315 (irregular)	2.89
Crossbow 6-18M Cuts/Fills/Stockpiles	Varies	Varies	0.08
Crossbow 6-18M Access Road	536	40	0.49
Total Proposed Action New Disturbance			3.58

The proposed action will require the construction of one new engineered (cut & fill) well pad, as well as one new access road. Additional activity will be confined to expansion of an existing well pad by 16 feet and travel along an existing access road. The total surface disturbance associated with the construction of these locations and access road is approximately 3.58 acres. This acreage includes disturbance associated with the well pads, spoil and topsoil storage areas, and the construction equipment and vehicle disturbance. The access road will be constructed to meet the standard of the anticipated traffic flow and all-weather requirements. Construction will include ditching, draining, graveling, and crowning of the roadbed.

The proposed Crossbow 5-18H and 19-18H wells are located on an existing pad for the Crossbow 02-18H well. The pad will be extended by 16 feet to the south. The stored topsoil will be spread along the west side and seeded for long term storage. The spoils from the new oil based drilling mud pit will be used for the pad expansion. The oil based mud used for the drilling of the Crossbow 02-18H was solidified and buried during interim reclamation (approved under Sundry Notice by the Authorized Officer [AO]). The existing pit will be used as the pit for the Crossbow 05-18H and 19-18H. Water contained in the pit is expected to be evaporated prior to drilling the Crossbow 5-18H. Any remaining water will be utilized for drilling operations. If the Crossbow 19-18H is drilled immediately following the Crossbow 05-18H, the oil-based mud will be solidified before additional oil-based mud will be placed on top of it. In the event, the Crossbow 19-18H is not drilled following the Crossbow 05-18H, the water contained in the pit is expected to be evaporated prior to drilling, and the oil based mud used for drilling will be solidified and buried (upon approval by the AO).

A fence will be placed around the reserve pit to keep wildlife and livestock out. The reserve pit is fenced on three sides during drilling operations and the fourth side will be fenced after the drilling rig

moves off the location. This fence will be either: (1) woven wire within 4 inches of the ground surface with strands of barbed wire above the woven wire with 10 inch spacing, barbed wire spaced, starting from the ground, at approximately 6, 8, 10, and 12 inch intervals.

Siphons, catchments, and absorbent pads will be installed to keep hydrocarbons produced by the drilling rig from entering the reserve pit. Hydrocarbons and contaminated pads will be disposed of in accordance with Wyoming DEQ requirements. The reserve pit will be backfilled as soon as dry after drilling and completion operations are finished. If natural evaporation of the reserve pit is not feasible, alternative methods of drying, removal of fluids, or other treatment will be developed. If fluids will be disposed of by any method other than evaporation or hauling to a DEQ approved disposal pit, prior approval from the AO will be obtained.

Water for drilling will be obtained from the Spring Creek No. #2 Water Haul, Permit No. 33932, located in the SESE of Section 24, Township 41N, Range 72W. No water supply well will be drilled.

During drilling, the water will be transported daily on the access road via truck by an approved commercial water hauler.

After completion and testing, the Crossbow 6-18M (monitoring well) will be plugged, and the well pad will be reclaimed back to the well head.

If production is established on the Crossbow 5-18H or 19-18H wells, production facilities will be installed on the well pad. Production facilities can include three 400 bbl crude tanks, one 400 bbl produced water tank, and a 6x20 vertical heater treater. At a minimum, the production facilities and pumping unit will require a working area of approximately 0.75 acre. The pumping unit will have a 75 horsepower electric motor. The power source to run the pumping unit will be a 100-kW generator to be placed on the well pad. The generator will be fueled by natural gas produced at the well head, a byproduct of conventional oil production. The generator's noise level is expected to be 100 decibels at 50 feet, although this value could change due to varying load levels on the generator.

The entire Crossbow 6-18M and all but 0.75 acre of the Crossbow 5-18H/19-18H well pad will be reclaimed following completion of the well. Topsoil from the berms and/or storage piles will be spread along the roads and pads. Drainage ditches or culverts will not be blocked with topsoil and associated organic matter. The unused area of the pads will be recontoured and topsoil spread 6 inches deep. The area on the contour will be ripped 1 foot deep using ripper teeth set on 1-foot centers. The topsoil areas and reclaimed area of the well pad will be seeded as specified in the Surface Use Plan of Operations.

All disturbed areas will be seeded using a drill equipped with a depth regulator. All seed will be drilled on the contour. The seed will be planted between one-quarter and one-half inch deep. Seeding will be done either in late autumn (September 15 to November 15, before freeze up) after completion or as early as possible the following spring to take advantage of available ground moisture.

Reclamation will be monitored by a qualified Operator representative (in coordination with the BLM) following initial rehabilitation work. Reclamation areas will be re-examined at the end of the first growing season. Results will be documented in a report to the BLM. Problem areas identified during monitoring will receive follow-up rehabilitation/erosion control measures. The seeding will be repeated until a satisfactory stand, as determined by the landowner, is obtained.

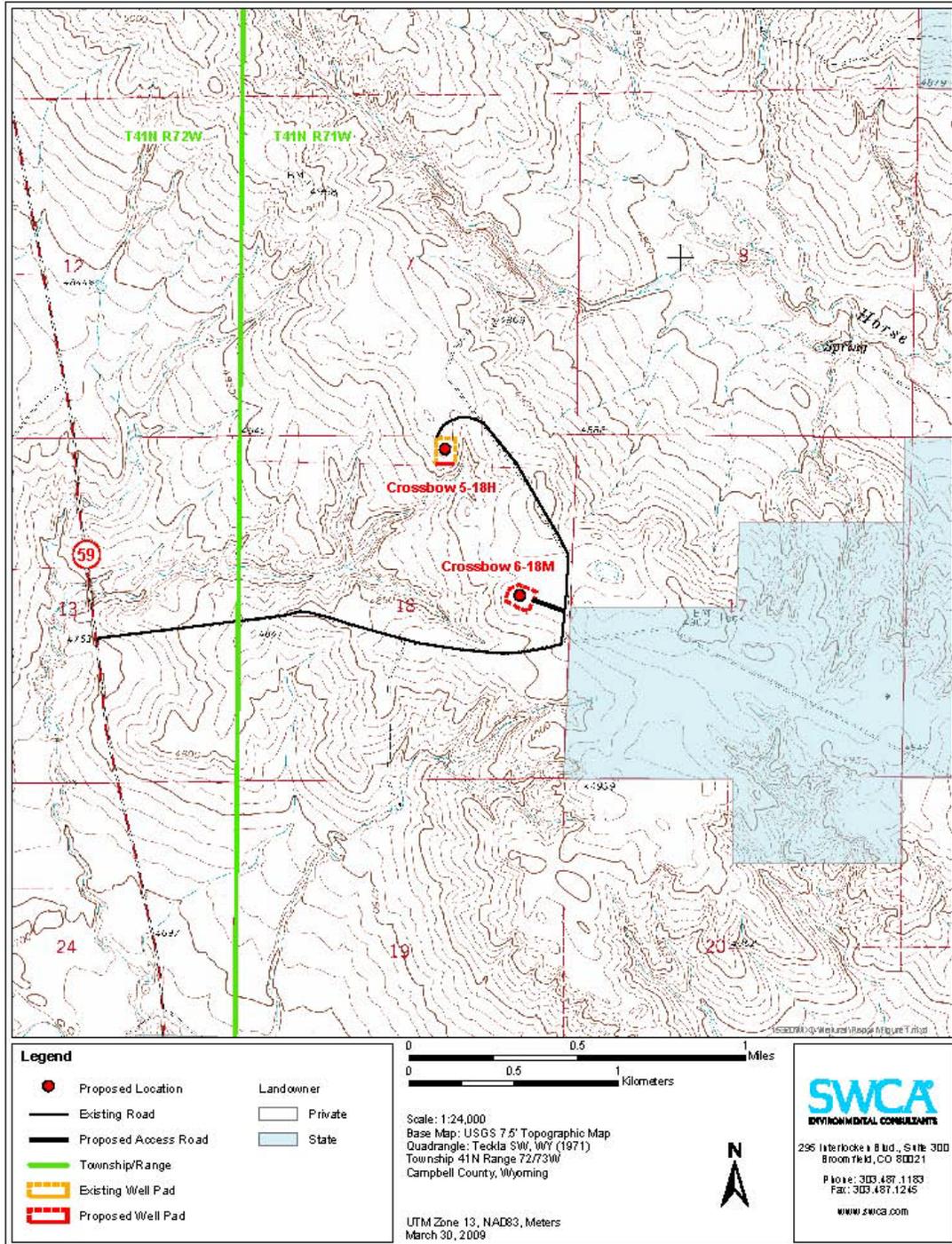


Figure 1. Project Location for the Proposed Crossbow 5-18H and 6-18M Wells.

Once the well is on production, a pumper will be on location daily to monitor the production facilities and to ensure that the equipment is functioning properly. Daily well visits may last from 20 to 60 days, as this is an exploratory well. No other daily traffic will be anticipated after production facilities are installed. If the well is determined to be capable of producing economically, EOG may install SCADA systems and automation to minimize well site visits to less than daily. As required by law, oil wells will still be visited at least once per week to monitor production equipment and detect leaks or spills.

The Operator has committed to a number of best management practices (BMPs), as described below. In addition, the action will be subject to the attached Conditions of Approval (COA) for drilling an oil/gas well on private surface/federal mineral lands within the Buffalo Field Office jurisdiction. For more detail on design features and construction practices, also refer to the Surface Use Plan of Operations and Drilling Plans in each APD. These plans have been written and reviewed to sure that environmental impact to both surface and subsurface resources are eliminated or minimized. Also see the individual APDs for maps showing the access roads and well locations.

Operator-Committed Best Management Practices

The Operator has committed to the following BMPs, which were included in BLM Instruction Memorandum No. 2007-021 and/or in BLM guidance:

- Interim reclamation of well locations and access roads soon after the well is put into production.
- Painting all new facilities a color that best allows the facility to blend with the background, typically a vegetated background.
- Design and construction of new road to a safe and appropriate standard “no higher than necessary” to accommodate the intended use.
- Final reclamation recontouring of all disturbed areas, including access roads, to the original contour that blends with the surrounding topography.
- Installing raptor perch avoidance or burying power lines, should future lines be needed if production is established.
- Drilling multiple wells from a single pad (Crossbow 5-18H and 19-18H wells are located on an existing well pad).
- Avoiding placement of production facilities on hilltops and ridgelines.
Pad design to minimize disturbance (Crossbow 6-18M was designed to eliminate impacts to a small drainage.)

Changes as a result of the pre-approval onsite inspection

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

Well ID	QTR	Section	T/R	Notes
Crossbow 6-18M	SENE	18	41/71	The west corner was moved in approximately 30 feet to avoid a small drainage. No production will occur at the site. f production does become an option for this location, changes will be submitted via Sundry. The proposed well site is located in relatively flat topography. The surrounding area is introduced pasture with sparse sage brush. The dominate (sic) vegetation found consists of W. wheat grass, Needle and Thread, Blue Grama, Pricklypear, Sweet Clover, and Cheat grass. Soils are sandy.

Well ID	QTR	Section	T/R	Notes
Crossbow 5-18H	NWNE	18	41/71	The proposed well site is located on an existing pad for the Crossbow 2-18H well. The pad will be extended 15 feet to the South. The final pad size will be 200x216'. The stored topsoil will be spread along the west side of the pad and seeded for long term storage. The material to be used for expansion will be the spoils removed during construction of a new pit for the oil based drilling mud. There is one existing pit containing oil based mud used for drilling the Crossbow 2-18H. The pits containing the oil based mud will be solidified and buried. Proper permits need to be acquired and submitted with the APD. The existing pit (excluding the existing oil based mud pit) will be used as the pit for the Crossbow 5-18H well. Water contained in the pit is expected to be evaporated prior to drilling the Crossbow 5-18H. Any remaining water will be used for drilling operations.

Alternatives Considered but Eliminated from Detailed Study

An alternative was considered to move the location of the two well pads. Based on the onsite inspection, there are no environmental benefits for doing so.

DESCRIPTION OF THE AFFECTED ENVIRONMENT

Notice of Staking (NOS) applications for the wells were received on December 30, 2008. Field inspections of the proposed well locations were conducted as follows:

- March 4, 2009 by Meleah Corey (Natural Resource Specialist) and Scott Jawors (Wildlife Biologist) – BLM; Dan Holgate and Jennifer Yu – EOG Resources, Inc.; Lee Isenburger (surface owner)

Topographic Characteristics

The wells are located in Campbell County, Wyoming. The project area ranges in elevation from 4,700 to 5,000 feet above sea level. The drainages in the vicinity include Horse Creek and Spring Creek. The topography of the area is flat to rolling grasslands with minimal sagebrush inclusion. The area falls within a 12-16" precipitation zone, with most of the precipitation falling during late winter and spring. The surface ownership in the general area is a mixture of private, State, and BLM surface, with cattle grazing, coal mining, and oil and gas development being the primary surface uses.

Vegetation

The Project Area is characterized by flat to rolling shortgrass prairie with minimal sagebrush (*Artemisia tridentata*) inclusion. The dominant vegetation in the area consists of western wheatgrass (*Pascopyrum smithii*), needle and thread grass (*Hesperostipa comata*), blue grama (*Bouteloua gracilis*), pricklypear (*Opuntia* sp.), sweet clover (*Melilotus* sp.), and cheatgrass (*Bromus tectorum*).

Invasive, Nonnative Species

Twenty-five invasive plant species are listed on the State of Wyoming Designated Noxious Weeds and Prohibited Noxious Weeds list (State of Wyoming 2008a). No state-listed noxious weed populations or weeds of concern have been observed within the Project Area; however, cheatgrass (an opportunistic grass and prolific seed producer) was observed in the Project Area and vicinity during the BLM onsite (4 March 2009).

Soils

Soils observed in the Project Area consist of two different units and associations. Soils information for the proposed Project Area was obtained using the National Resources Conservation Service (NRCS) web soil survey (NRCS 2008a). Soils in the area are relatively undeveloped, formed in recent alluvium or sand, and are common in floodplains and sandhills (U.S. Army Corps of Engineers 2008). Soils found in the Project Area consist of the Forkwood-Ulm series and Hiland-Bowbac series. Each is described below.

The Forkwood-Ulm series consists of well-drained soils formed in alluvium on terraces, alluvial fans, piedmonts, hill, ridges, and buttes. Slopes range from 0 to 6%. These soils have a low to medium runoff and a moderate permeability. The parent material for these soils is sandstone, siltstone, and shale, sometimes formed from calcareous alluvium which contributes to the very fine sandy texture of these soils. The depth to groundwater for these soils is usually greater than 80 inches, and the available water capacity is high. Flooding and ponding of these soils is very infrequent, and the depth to bedrock is less than 60 inches (NRCS 2008a).

The Hiland-Bowbac series consists of very deep, well-drained soils formed in alluvium or aeolian deposits on terraces, fans and fan remnants, ridges, hills, stabilized dunes, and buttes. Slopes range from 0 to 6% and are both simple and complex. These soils have a moderate permeability with a low to medium runoff potential. These soils are derived primarily from sandstone and have a fine sandy loam texture. The depth to groundwater in these soils is greater than 80 inches with bedrock less than 40 inches from the surface. The available water capacity for this soil series is moderate with ponding and flooding nonexistent (NRCS 2008a).

According to the NRCS and the National Hydric Soils List by State, the Forkwood-Ulm series is listed as soils that may exhibit hydric soil properties on a localized scale. The Hiland-Bowbac series is not listed as a potential hydric soil unit.

Surface Water

Surface water resources in the proposed Project Area consist of small agricultural impoundments and reservoirs within slight isolated depressions or gullies with associated ephemeral streams. According to the U.S. Geological Survey Quadrangle Teckla Southwest (1971), Wyoming, the closest significant named surface water feature in the area is the Lazy Y No. 1 Reservoir which is located approximately 7.8 miles southeast of the Project Area within West Logan Draw. West Logan Draw flows to Antelope Creek and eventually to the Cheyenne River 20 miles east-southeast of the Project Area. Two named streams do occur in relative proximity to the area. Horse Creek is located 3,000 feet to the northwest (NW) of the 5-18/19-18 location and 4,660 feet NW of the 6-18 location and flows east away from the Project Area. Spring Creek is slightly farther from the Project Area and is located 10,000 feet southwest (SW) of the 6-18 and 11,000 feet SW of the 5-18/19-18, and flows south away from the Project Area. No named lakes or reservoirs are located within 5 miles of the Project Area; however, a small surface water feature approximately 3.0 acres in size is found 1.8 miles north of the area. A smaller surface impoundment is also located 0.6 mile northeast of the 5-18/19-18 location in the Horse Creek drainage.

Wetlands and Riparian

Wetlands in the proposed Project Area are predominantly affiliated with the seasonally wet and dry ephemeral streams and slight depressions in the area. Based on the National Wetland Inventory (NWI) database, three potential isolated wetlands occur within 0.5 mile of the Project Area; two occur near the 6-18 location (see Figure 2). Well pad siting and access road construction avoids and buffers the closest seasonal wetland feature by 75 to 80 feet. A second wetland is located in a slight depression approximately 790 feet east of the 6-18 access road. Based on NWI, a third wetland area is also located approximately 1,600 feet NW of the 5-18/19-18 location. These features are shown on Figure 2.

Wetland and riparian habitats will be associated with the named ephemeral streams in the area such as Horse and Spring creeks. It can be expected that a narrow riparian corridor and associated wetlands in the bottoms of the active channels can be associated with these ephemeral streams. Unnamed tributaries of the named stream are expected to exhibit even less riparian and wetland characteristics depending on catchment size, drainage gradients, and substrate composition (SWCA 2008). The hydrology of these ephemeral drainages is relatively localized by catchment with influx limited to localized precipitation events and snow melt during the spring months. A small ephemeral gully is located just south of the 5-18/19-18 well pad location. The siting of the location is such as to avoid and not encroach into this feature. No wetland or riparian habitat is observed in this drainage feature near the 5-18/19-18 location.

Wetland soils within the isolated depressions near the Project Area are primarily characterized as poorly- to somewhat well-drained and comprised of a fine sandy skeletal mix or a fine sandy clay loam within a fine granular structure (SWCA 2008). Wetland soils in these small depressions are smaller units of the Forkwood-Ulm series and Hiland-Bowbac series.

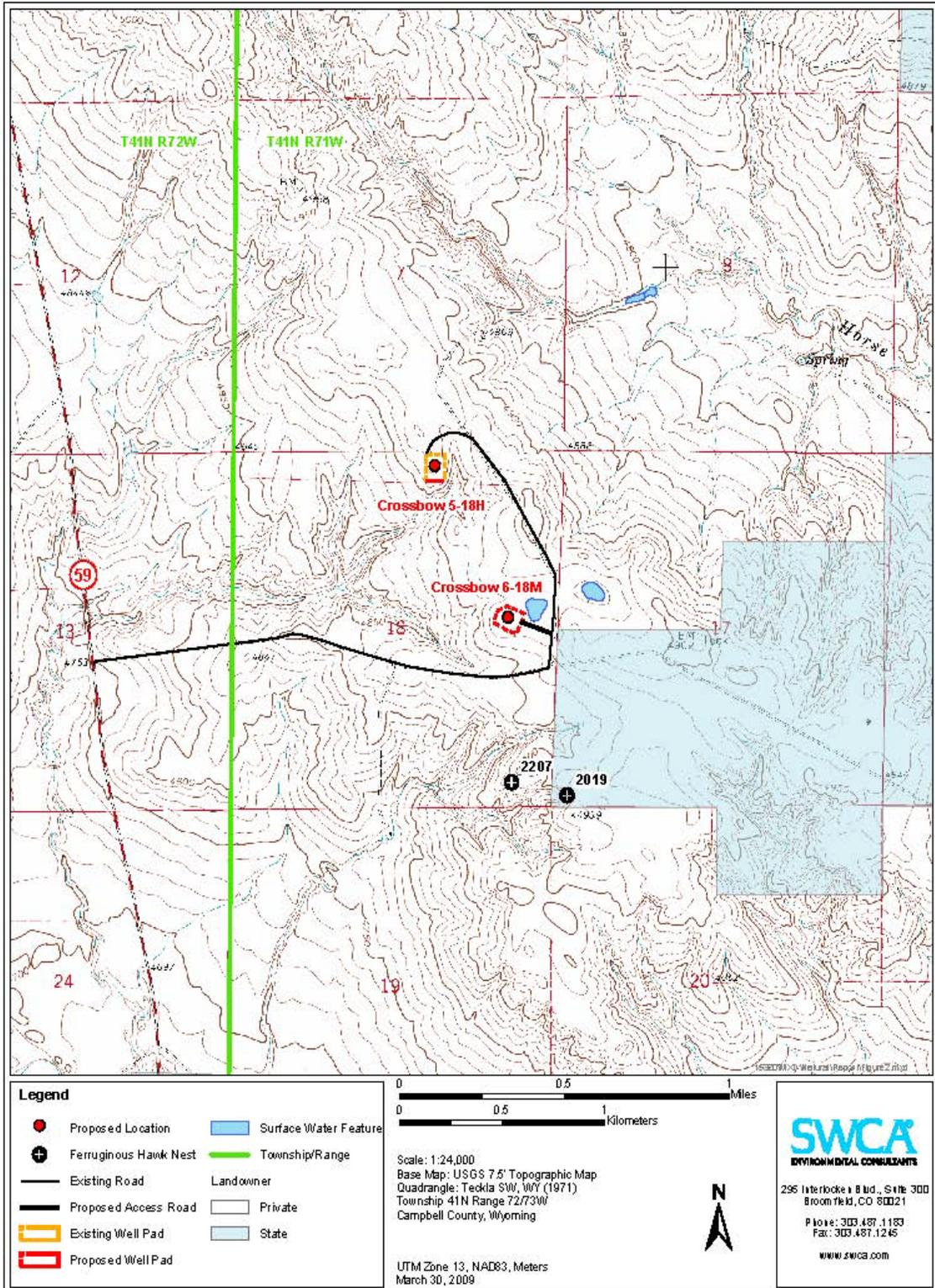


Figure 2. Project Location, Ferruginous Hawk Nests, and Surface Water Features for the Proposed Crossbow 5-18H and 6-18M Wells.

Groundwater

Groundwater in the Project Area originates from regional and localized aquifers. Typical groundwater depths for the localized aquifer in the area of the proposed action is approximately 59 feet below the surface (SDVC 2009). Based on information from the Wyoming State Engineers Office for permitted wells, 18 wells are located within Section 18 (Wyoming State Engineers Office 2009d). Of these well bores, 17 are associated with coalbed methane (CBM) development. Four of the CBM wells are also the sources for reservoir supply and have an average static depth ranging from 300 to 543 feet from the surface. One monitoring well is located between the proposed well bore for the 5-18 and 6-18 locations. Two domestic wells are within 6 miles of the Project Area. The closest domestic well is 4.4 miles south of the Project Area; the second closest domestic well is approximately 5.5 miles northeast of the Project Area (Wyoming State Engineers Office 2009d).

Wildlife

The Project Area is characterized by flat to rolling shortgrass prairie with minimal sagebrush inclusion. Wildlife that may potentially occur in this habitat type includes several migratory bird and raptor species. A list of wildlife species typical of shortgrass prairie in the Powder River Basin (PRB) may be found in the PRB Final Environmental Impact Statement (FEIS) (BLM 2003).

Wyoming Game and Fish Department (WGFD) databases were accessed to determine whether the proposed new well site (6-18M) and access road, and the existing well pad (5-18H/6-18H) planned for expansion are located in big game ranges and migration corridors. The proposed new well site and access road are within mule deer (*Odocoileus hemionus*) year-long range and both well sites and the access road are in pronghorn (*Antilocapra americana*) year-long range. Neither site is within mapped seasonal range for elk (*Cervus canadensis*) or crucial winter range for any big game species. No parturition areas or migration corridors occur within or in the immediate vicinity of the Project Area. The nearest parturition area for elk is approximately 14 miles east of the Project Area.

Threatened, Endangered, and Sensitive Species

The U.S. Fish and Wildlife Service (USFWS) list of endangered, threatened, and candidate species for Campbell County, Wyoming (USFWS 2008a), the BLM Wyoming sensitive species list (BLM 2002), and Buffalo Field Office Resource Management Plan (BLM 1985) were consulted to determine species potentially affected by the proposed action (see table below). No federally listed species are known to occur in the Project Area or vicinity. The Project Area is not within 2 miles of any greater sage-grouse (*Centrocercus urophasianus*) leks. The Project Area also is not within a greater sage-grouse core area (State of Wyoming 2008).

USFWS-Listed¹ and BLM Buffalo Field Office Sensitive Species.

Species	Scientific Name	Status	Status in Project Area
Mammals			
Long-eared myotis	<i>Myotis evotis</i>	BLM sensitive	Unlikely; no suitable habitat
Fringed myotis	<i>Myotis thysanodes</i>	BLM sensitive	Unlikely; no suitable habitat
Spotted bat	<i>Euderma maculatum</i>	BLM sensitive	Outside known range
Townsend’s big-eared bat	<i>Corynorhinus townsendii</i>	BLM sensitive	Unlikely; no suitable habitat
Black-tailed prairie dog	<i>Cynomys ludovicianus</i>	BLM sensitive	Not present

USFWS-Listed¹ and BLM Buffalo Field Office Sensitive Species (cont.)

Species	Scientific Name	Status	Status in Project Area
Black-footed ferret	<i>Mustela nigripes</i>	USFWS endangered	Not present; no suitable habitat
Swift fox	<i>Vulpes velox</i>	BLM sensitive	Possible
Birds			
Trumpeter swan	<i>Cygnus buccinator</i>	BLM sensitive	Unlikely; no suitable habitat
White-faced ibis	<i>Plegadis chihi</i>	BLM sensitive	Unlikely; no suitable habitat
Northern goshawk	<i>Accipiter gentilis</i>	BLM sensitive	Unlikely; no suitable habitat
Bald eagle (nest, winter roost)	<i>Haliaeetus leucocephalus</i>	BLM sensitive	Unlikely; no suitable habitat or nest sites
Ferruginous hawk (nest) ²	<i>Buteo regalis</i>	BLM sensitive	Known
Peregrine falcon	<i>Falco peregrinus</i>	BLM sensitive	Possible
Greater sage-grouse (lek)	<i>Centrocercus urophasianus</i>	BLM sensitive	Not known
Plains sharp-tailed grouse (lek)	<i>Tympanuchus phasianellus jamesi</i>	BLM sensitive	Not known
Mountain plover	<i>Charadrius montanus</i>	BLM sensitive	Possible
Long-billed curlew	<i>Numenius americanus</i>	BLM sensitive	Possible
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	BLM sensitive	Unlikely; no suitable habitat
Burrowing owl	<i>Athene cunicularia</i>	BLM sensitive	Possible
Sage thrasher	<i>Oreoscoptes montanus</i>	BLM sensitive	Possible
Loggerhead shrike	<i>Lanius ludovicianus</i>	BLM sensitive	Possible
Brewer's sparrow	<i>Spizella breweri</i>	BLM sensitive	Possible
Sage sparrow	<i>Amphispiza belli</i>	BLM sensitive	Possible
Baird's sparrow	<i>Ammodramus bairdii</i>	BLM sensitive	Possible
Fish			
Yellowstone cutthroat trout	<i>Oncorhynchus clarki bouvieri</i>	BLM sensitive	Not present; outside known range
Amphibians			
Northern leopard frog	<i>Rana pipiens</i>	BLM sensitive	Unlikely; no suitable habitat
Columbia spotted frog	<i>Rana luteiventris</i>	BLM sensitive	Outside known range
Plants			
Porter's sagebrush	<i>Artemisia porteri</i>	BLM sensitive	Outside known range
Williams' wafer-parsnip	<i>Cymopterus williamsii</i>	BLM sensitive	Outside known range
Blowout penstemon	<i>Penstemon haydenii</i>	USFWS endangered	Unlikely; no suitable habitat
Ute ladies'-tresses	<i>Spiranthes diluvialis</i>	USFWS threatened	Unlikely; no suitable habitat

¹ On July 10, 2008, the USFWS delisted the Preble's meadow jumping mouse (*Zapus hudsonius preblei*) within its Wyoming range (USFWS 2008b).

² The Buffalo Field Office (BLM 2009a) removed ferruginous hawk from its list of raptor species to which a pilot program to implement species-specific exception to timing restrictions for nesting applied.

No federally listed species are known to occur in the Project Area or vicinity. The Project Area is not within 2 miles of any greater sage-grouse (*Centrocercus urophasianus*) leks. The nearest greater sage-grouse lek is 4.7 miles north/northwest of the Crossbow 5-18H/19-18H well pad location. The Project Area also is not within a greater sage-grouse core area (State of Wyoming 2008).

Several BLM sensitive species are unlikely to occur in the Project Area due to lack of suitable habitat. Bird species listed as “possible” in the above table may occur in or near the Project Area on an irregular basis or fly through the area occasionally. These bird species are most likely to occur only during periods of migration. Species listed as “unlikely” or “possible” are not expected to regularly occur in the Project Area and are not discussed further in this EA, except for mountain plover.

Ferruginous hawk (*Buteo regalis*) is the only sensitive species known to occur in the vicinity of the Project Area (BLM 2009b), while swift fox (*Vulpes velox*) is possible based on known range and habitat requirements (BLM 2003). No wildlife surveys were conducted for the proposed action. Raptor nest information was obtained from BLM databases. The BLM raptor database indicates two active ferruginous hawk ground nests (BLM Identification Nos. 2019 and 2207) within 0.5-mile of the proposed access road and well location of the Crossbow 6-18M (Figure 2). A third nest (BLM No. 2190) also mapped within 0.5-mile of the Crossbow 6-18M was identified as inactive in 2004 and non-existent in 2007.

Mountain plover (*Charadrius montanus*) are known from southeastern Campbell County (Smith and Keinath 2004) and may potentially nest in or near the Project Area. The species prefers areas with short herbaceous vegetation in flat topography with some measure of disturbance, typically heavy grazing (e.g., prairie dog colonies, sheep and cattle grazing allotments). These habitat characteristics are found in the Project Area and surrounding landscape.

Air Quality

Existing air quality throughout the PRB is in attainment with all ambient air quality standards. Although specific air quality monitoring is not conducted throughout most of the PRB, 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 the following:

- Exhaust emissions (primarily CO and oxides of nitrogen [NO_x]) from existing compressor engines used in production of oil, natural gas, and coal bed methane natural gas; 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; and
- SO₂ and NO_x from power plants.

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

Cultural or Historic Values

A previously reviewed and accepted Class III cultural resource inventory (BFO # 70020207, 70050071) adequately covered the proposed project area. No cultural resources are in the area of potential effect. On 7/27/2009 Ardeth Hahn, BLM Archaeologist, electronically notified the Wyoming State Historic Preservation Office (SHPO) following section VI(A)(1) of the Wyoming State Protocol, of a finding of no effect for the proposed project.

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

Approximately 3.58 acres of native vegetation will be disturbed by the proposed action. Applicant-committed BMPs to implement interim reclamation and drill multiple wells from a single well pad will reduce the long-term impacts to vegetation in the project area.

Invasive, Non-native Species

Surface disturbances associated with the implementation and construction of the proposed well sites and access roads will present opportunities for weed invasion and spread. Direct impacts to native vegetation from weed infestations in the Project Area may include the loss of wildlife habitat, rangeland productivity, and reduced native plant species diversity. Indirect impacts resulting from weed infestations could be changes in the fire cycle due to the potential for cheatgrass proliferation on disturbed soils and increased costs from weed management efforts. Operator-committed measures will control invasive plants on all disturbed areas, and these control measures will be in accordance with BLM, State, County, and other local regulatory agencies.

Soils

Impacts to soil resources within the proposed Project Area are directly related to the amount of surface disturbances resulting from the proposed action. Direct soil impacts include soil horizon disturbances in the O, A1, and A2 horizons resulting from site clearing, cut and fills, and location and access road grading. Secondary impacts to soils include loss of soils to wind, rain, and other erosive forces following horizon disturbances. Due to the small area that will be disturbed as a result of the proposed action, impacts to soil resources will be expected to be minimal considering the vast extent of the Forkwood-Ulm and Hiland-Bowbac soil series in the area. Operator-committed measures like topsoil stockpiling and restoration following construction will further minimize potential soil impacts and losses from erosive forces.

Surface Water

Due to the lack of surface water features in the Project Area, no direct or secondary impacts will be expected to occur from the proposed action.

Wetlands and Riparian

No direct impacts to wetlands or riparian habitats will occur by the construction of the 6-18 access road and well pad and the slight expansion of the existing 2-18 well pad to accommodate the 5-18 and 19-18H bores. Indirect impacts to wetlands and riparian areas will occur if erosion and sedimentation occurs causing deposition in these down-gradient areas. Due to the avoidance of these types of habitats and operator-committed measures for stormwater management, secondary impacts to the resources will not be expected. Further measures, including Best Management Practices (BMPs) and site reclamation, will further minimize the potential for any secondary impacts to these surface water features.

Groundwater

Due to the depth of the proposed well bores, lack of domestic or agricultural wells in the area, and well head completion technologies, no direct impacts to groundwater will result from the proposed action. Indirect impacts to groundwater resources potentially could occur if significant dewatering and other large-volume groundwater removal occurs during well operations and production. Indirect impact could also occur if well completion technologies and other completion regulations are not followed.

Wildlife

Approximately 3.46 acres of surface disturbance will occur in mule deer year-long range, and 3.58 acres of surface disturbance in pronghorn year-long range. These disturbances will be short-term due to the establishment of native vegetation associated with reclamation activities. Mule deer and pronghorn may be temporarily displaced during construction activities, but likely will return following construction. A fence constructed around the perimeter of the reserve pit will keep wildlife, including big game, from accessing the pit. Temporary displacement may continue in response to periodic human activities associated with operations and maintenance.

Raptors and migratory birds will also experience some habitat loss; however, impacts will be reduced by reclamation efforts. Impacts will be relatively short-term where effective reclamation is successful in re-establishing native grasses, forbs, and brush species in a relatively short period of time. Human activities may temporarily displace birds occupying areas in close proximity to the well sites and access roads. If these activities are close to raptor nests, nest productivity could be impacted.

Threatened, Endangered, and Sensitive Species

No federally listed species are known to occur in the Project Area or vicinity and no impacts will be expected.

Ferruginous hawk and swift fox are either known or expected, respectively, for the Project Area. Indirect impacts to ferruginous hawk may include disturbance from human activities during construction and maintenance activities during the nesting season. No direct impacts will be expected. With appropriate implementation of standard mitigation measures for nesting raptors, indirect impacts will be minimized. Swift foxes are generally nocturnal and their periods of activity are not expected to overlap with construction and maintenance activities. No denning sites are documented for the Project Area. No impacts to swift fox will be expected.

Nesting mountain plovers are possible in the Project Area. Pre-construction surveys for nesting mountain plovers will be conducted by a qualified biologist prior to any construction taking place during the nesting season between March 15 and July 31. Direct impacts may involve mortality of adult and young from vehicle collisions if access roads are located in plover nesting areas. Indirect impacts may include increased predation pressure if structures are located within 0.5 mile of nesting areas, disturbance from human activities during the nesting season, and loss of 3.58 acres of suitable nesting habitat. Direct impacts may involve mortality of adult and young from vehicle collisions if access roads are located in plover nesting areas.

Air Quality

Air emissions will result from construction, drilling and completion activities, and production. Construction emissions will occur from earth-moving equipment, vehicle traffic, and fugitive dust. Drilling rig, workover rig, and vehicle engine exhaust will result in additional emissions. Well production equipment could result in fugitive emissions as well. The amount of air pollutant emissions will be controlled by watering disturbed soils and by air pollutant emission controls imposed by the

Wyoming Department of Environmental Quality – Air Quality Division. Air quality impacts modeled in the PRB FEIS concluded that projected oil and gas development will not violate any local, state, tribal, or national air quality standards. This project will not contribute to any air quality standard exceedences.

Cultural or Historic Values

No historic properties will be impacted by the proposed project. Following the Wyoming State Protocol Section VI(A)(1) the Bureau of Land Management electronically notified the Wyoming State Historic Preservation Officer (SHPO) on 7/27/2009 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).

Cumulative Effects

No significant impacts will result from approval of the proposed action. Minor impacts to resources will be further minimized by application of Operator-committed BMPs, mitigation measures, and Conditions of Approval for the proposed action. Since no significant impacts to resources will occur from the proposed action, no cumulative effects will result from the approval.

DESCRIPTION OF PROPOSED MITIGATION MEASURES

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

Mitigation Measures

Mitigation measures have been determined through analysis to be appropriate to apply at the time of APD approval as site-specific conditions warrant. These mitigation measures can be applied by BLM, as determined necessary at the site-specific NEPA APD stage, as COAs, and are in addition to stipulations applied at the time of lease issuance and any standard COA. The following mitigation measures are applied to the proposed action:

Vegetation

1. Temporarily fence reseeded areas for at least two complete growing seasons to ensure reclamation success on problematic sites (e.g., close to livestock watering source, erosive soils, etc.).

Soils

1. Grading and site preparation BMPs and other soil retention measures will mitigate for potential soil losses and other erosive forces. Topsoil segregation will occur at the proposed well pads to be used during future pad reclamations and project restorations, thereby mitigating impacts to soils at the two proposed locations. An existing road to the 5-18 location will be used to minimize soil disturbances to the 5-18 location and the proposed reclamation of the 6-18 well pad and access road will further mitigate for soils loss to erosive forces.

Wetlands and Riparian

1. Implement site BMPs during construction and reclamation to mitigate secondary impacts to wetland and riparian resources. BMPs will be installed and maintained in accordance with applicable stormwater measures and BMPs.

Wildlife

1. The Project Area and 0.5-mile buffer will be surveyed for raptor nest activity by a qualified biologist prior to construction activities between April 15 and June 30.
2. Surface disturbance activities will be restricted within 0.5 mile of an occupied raptor nest between February 1 and July 31.
3. All infrastructure requiring human visitation will be located more than 0.25 mile from occupied raptor nests. Human activities within the 0.25-mile buffer could occur if activities are obscured by vegetation or topography from nest line-of-sight.
4. Pre-construction surveys for mountain plover will be conducted within 0.25 mile of the Project Area between May 1 and June 15. A 0.25-mile disturbance-free buffer zone will be established for all nesting locations between March 15 and July 31.
5. Project-related features that encourage or enhance the hunting efficiency of predators of mountain plover will not be constructed within 0.25 mile of known mountain plover nest sites.
6. Creation of hunting perches or nest sites for avian predators within 0.5 mile of identified nesting areas will be avoided by using the lowest possible structures for fences and by incorporating perch-inhibiting devices into their design.
7. When above ground markers are used on capped and abandoned wells, they will be identified with markers no taller than four feet with perch-inhibiting devices on the top to avoid creation of raptor hunting perches within 0.5 mile of nesting areas.

Air Quality

1. During construction, emissions of particulate matter from well pad and resource road construction will be minimized by application of water, or other dust suppressants, with at least 50 percent control efficiency. Roads and well locations constructed on soils susceptible to wind erosion could be appropriately surfaced or otherwise stabilized to reduce the amount of fugitive dust generated by traffic or other activities, and dust inhibitors (surfacing materials, non-saline dust suppressants, and water) could be used as necessary on unpaved collector, local, and resource roads that present a fugitive dust problem. The use of chemical dust suppressants on any BLM surface will require prior approval from the BLM AO.

CONSULTATION/COORDINATION

Contact	Title	Organization	Present at Onsite?
Jennifer Yu	Senior Regulatory Assistant	EOG Resources, Inc.	Yes
Dan Holgate	Construction Foreman	EOG Resources, Inc.	Yes
Lee Isenberger	Surface Owner	Isenberger Land, LLC	Yes
Heather Smith	NEPA Coordinator	EOG Resources, Inc.	No

AUTHORITIES

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

Code of Federal Regulations (CFR)

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

The Federal Land Policy and Management Act, as amended. Public Law 94-579. U.S. Department of the Interior, Bureau of Land Management and Office of the Solicitor (editors). 2001.

REFERENCES

Bureau of Land Management (BLM). 2009a. January 28, 2009, letter to operators. USDI Bureau of Land Management, Buffalo Field Office, Buffalo, Wyoming. Available online at http://www.blm.gov/wy/st/en/field_offices/Buffalo/minerals.html. Accessed March 2009.

State of Wyoming. 2009b. Raptor nest sites for the BLM Buffalo Field Office Wyoming. Available online at <http://partners.wygisc.uwyo.edu/wygeolibrary/explorer.jsf>. Accessed March 2009.

State of Wyoming. 2008. Guidance for general management actions during BFO Resource Management Plan Revision.

State of Wyoming. 2003. Powder River Oil and Gas Project Environmental Impact Statement and Resource Management Plan Amendment.

State of Wyoming. 985. Record of Decision for the Resource Management Plan/Final Environmental Impact Statement for Buffalo Resource Area.

Natural Resources Conservation Service (NRCS). 2008a. Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Official Soil Series Descriptions. USDA-NRCS, Lincoln, NE. Available online at <http://soils.usda.gov/technical/classification/osd/index.html>. Accessed March 25 2009.

Smith, H. and D. A. Keinath. 2004. Species assessment for mountain plover (*Charadrius montanus*) in Wyoming. Report prepared for Bureau of Land Management, Wyoming State Office. Wyoming Natural Diversity Database, University of Wyoming, Laramie, WY.

Spatial Data and Visualization Center. 2009. Available online at <http://www.wygisc.uwyo.edu/atlas/>. Accessed March 25, 2009.

State of Wyoming. 2008a. Designated Noxious Weeds W.S. 11-5-102 (a)(xi) and Prohibited Noxious Weeds W.S. 11-12-104. Available online at <http://www.wyoweed.org/documents.html>. Accessed March 25, 2009.

State of Wyoming. 2008b. Declared List of Weeds and Pests: Wyoming Weed and Pest Control Act of 1973 W.S. 11-5-102(a)(vii) and W.S. 11-5-102(a)(viii). Available online at <http://www.wyoweed.org/Documents/WWFPage/2008DeclaredList.pdf>. Accessed March 25, 2009.

State of Wyoming . 2008c. Greater sage-grouse core area protection. Executive Order 2008-2. Office of the Governor, Cheyenne, Wyoming.

State of Wyoming . 2009d. Water Rights Database. Available online at http://seo.state.wy.us/wrbd/PS_WellLocation.aspx. Accessed March 26, 2009.

SWCA Environmental Consultants (SWCA). 2008. *Delineation Report of Waters of the U.S., Including Wetlands, for a Well Pad and Access Road in Campbell and Weston Counties, Wyoming*. Prepared for EOG Resources. On file at the United States Army Corps of Engineers Omaha District, Cheyenne Field Office, Wyoming.

U.S. Army Corps of Engineers (USACE). 2008. *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region*, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-08-12. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

Wyoming Game and Fish Department. 2006. Big game seasonal and critical range maps.

U.S. Fish and Wildlife Service (USFWS). 2008a. Endangered, threatened, and candidate species and designated critical habitat for Wyoming counties. USDI Fish and Wildlife Service, Ecological Services, Wyoming Field Office, Cheyenne. Available online at: <http://www.fws.gov/mountain-prairie/wy.html>. Accessed March 2009.

State of Wyoming. 2008b. Endangered and threatened wildlife and plants; final rule to amend the listing for the Preble's meadow jumping mouse (*Zapus hudsonius preblei*) to specify over what portion of its range the subspecies is threatened. Federal Register 73(133):39790-39838.

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Ardeth Hahn, Archaeologist
Scott Jawors, Wildlife Biologist
Kerry Aggen, Geologist
Duane Spencer, Field Manager

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CONDITIONS OF APPROVAL

I. Site Specific Conditions of Approval

General

1. All changes agreed to at the pre-approval onsite will be followed. The agreed-upon changes have been incorporated into the operator's APD package and the EA.
2. All proposed access roads, pads, and other locations where engineered construction will occur will be completely slope staked for the pre-construction meeting.
3. All EOG Resources representatives and contractors will have a copy of the approved APD package and COAs at all times while conducting construction activities.
4. Onshore Order #1, as revised effective 05-07-07, requires that all operators certify to the Field Office in writing that they have supplied a copy of the Surface Use Plan to each of the private surface owners affected by the project. This self-certification must be received by the Buffalo Field Office before construction on the project begins.

Vegetation

1. Temporarily fence reseeded areas for at least two complete growing seasons to ensure reclamation success on problematic sites (e.g., close to livestock watering source, erosive soils, etc.).

Soils

1. Grading and site preparation BMPs and other soil retention measures will mitigate for potential soil losses and other erosive forces. Topsoil segregation will occur at the proposed well pads to be used during future pad reclamations and project restorations, thereby mitigating impacts to soils at the two proposed locations. An existing road to the 5-18 location will be used to minimize soil disturbances to the 5-18 location and the proposed reclamation of the 6-18 well pad and access road will further mitigate for soils loss to erosive forces.

Wetlands and Riparian

1. Implement site BMPs during construction and reclamation to mitigate secondary impacts to wetland and riparian resources. BMPs will be installed and maintained in accordance with applicable stormwater measures and BMPs.

Wildlife

1. The Project Area and 0.5-mile buffer will be surveyed for raptor nest activity by a qualified biologist prior to construction activities between April 15 and June 30.
2. Surface disturbance activities will be restricted within 0.5 mile of an occupied raptor nest between February 1 and July 31.

3. All infrastructure requiring human visitation will be located more than 0.25 mile from occupied raptor nests. Human activities within the 0.25-mile buffer could occur if activities are obscured by vegetation or topography from nest line-of-sight.
4. Pre-construction surveys for mountain plover will be conducted within 0.25 mile of the Project Area between May 1 and June 15. A 0.25-mile disturbance-free buffer zone will be established for all nesting locations between March 15 and July 31.
5. Project-related features that encourage or enhance the hunting efficiency of predators of mountain plover will not be constructed within 0.25 mile of known mountain plover nest sites.
6. Creation of hunting perches or nest sites for avian predators within 0.5 mile of identified nesting areas will be avoided by using the lowest possible structures for fences and by incorporating perch-inhibiting devices into their design.
7. When above ground markers are used on capped and abandoned wells, they will be identified with markers no taller than four feet with perch-inhibiting devices on the top to avoid creation of raptor hunting perches within 0.5 mile of nesting areas.

Air Quality

1. During construction, emissions of particulate matter from well pad and resource road construction will be minimized by application of water, or other dust suppressants, with at least 50 percent control efficiency. Roads and well locations constructed on soils susceptible to wind erosion could be appropriately surfaced or otherwise stabilized to reduce the amount of fugitive dust generated by traffic or other activities, and dust inhibitors (surfacing materials, non-saline dust suppressants, and water) could be used as necessary on unpaved collector, local, and resource roads that present a fugitive dust problem. The use of chemical dust suppressants on any BLM surface will require prior approval from the BLM AO.

Please contact Meleah Corey – Natural Resource Specialist, Bureau of Land Management, Buffalo, if there are any questions concerning surface use COAs.

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 Crossbow 5-18H and 19-18H is Covert Green (18-0617 TPX).
2. Any oil or other toxic fluids that are inadvertently put into the reserve pit during drilling operations or up to the time of pit closure will be immediately (within 24 hours) removed by the operator.
3. Toe of fill stakes will remain in place during construction of the well pad until interim reclamation is initiated.

4. 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
2-4%	310 ft
5-8%	260 ft
9-12%	200 ft

5. Provide 4” of aggregate where grades exceed 8% for stability and erosion prevention.
6. 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.
7. The reserve pit will be closed as soon as possible, but no later than 6 months from time of drilling/well completion, unless the BLM AO 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.
8. Adequate drainage control must be in place at all stages of construction and culverts installed as soon as feasible.
9. If a dry hole, all rehabilitation work, including seeding, will be initiated within 30 days after plugging operations are completed (pending seasonal conditions).
10. 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:
 - i. Large rills or gullies.
 - ii. Perceptible soil movement or head cutting in drainages.
 - iii. 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 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.

This shall be demonstrated by:

- i. Successful onsite establishment of species included in the planting mixture or other desirable species.
 - ii. Evidence of vegetation reproduction, either by rhizomatous species or seed production.
- D. 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.

11. All topsoil removed during construction activities will be re-spread for interim reclamation success.

12. 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
Sandy Ecological Site**

Seed Mix

Species		% in Mix	Lbs PLS*
Thickspike Wheatgrass <i>(Elymus lanceolatus ssp. lanceolatus)</i>		20	2.4
Prairie sandreed <i>(Calamovilfa longifolia)</i>		30	3.6
Indian ricegrass <i>(Achnatherum hymenoides)</i>		20	2.4
Needleandthread <i>(Hesperostipa comata ssp. comata)</i>		15	1.8
Prairie coneflower <i>(Ratibida columnifera)</i>		5	0.6
White or purple prairie clover <i>(Dalea candidum, purpureum)</i>		5	0.6

Scarlet Globemallow (<i>Sphaeralcea coccinea</i>) / or Blue flax (<i>Linum lewisii</i>)		5	0.6
Totals		100%	12 lbs/acre

*PLS = pure live seed

*Northern Plains adapted species

*Double this rate if broadcast seeding

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

II. Standard Conditions of Approval

A. General

1. 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 AO 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.

2. If paleontological resources, either large or conspicuous, and/or a significant scientific value are discovered during construction, the find will be reported to the AO immediately. Construction will be suspended within 250 feet of said find. An evaluation of the paleontological discovery will be made by a BLM approved professional paleontologist within five (5) working days, weather permitting, to determine the appropriate action(s) to prevent the potential loss of any significant paleontological values. Operations within 250 feet of such a discovery will not be resumed until written authorization to proceed is issued by the AO. The applicant will bear the cost of any required paleontological appraisals, surface collection of fossils, or salvage of any large conspicuous fossils of significant scientific interest discovered during the operation.

3. The operator shall restrict travel on unimproved two-track roads during periods of inclement weather or spring thaw when the possibility exists for excessive surface resource damage (e.g., rutting in excess of 4-inches, travel outside two-track roadway, etc.)
4. If any dead or injured threatened, endangered, proposed, or candidate species is located during construction or operation, the USFWS's Wyoming Field Office (307-772-2374), their law enforcement office (307-261-6365), and the BLM Buffalo Field Office (307-684-1100) shall be notified within 24 hours. If any dead or injured sensitive species is located during construction or operation, the BLM Buffalo Field Office (307-684-1100) shall be notified within 24 hours.
5. All other conservation measures and terms and conditions identified in the Powder River Basin Oil and Gas Project Biological Opinion (WY07F0075) shall be complied with.
6. 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.
7. All contractors will have a copy of the engineered pad and road designs, as well as conditions of approval, with them at all time.

B. Construction

1. The operator will limit vegetation removal and the degree of surface disturbance wherever possible. Where surface disturbance cannot be avoided, all practicable measures will be utilized to minimize erosion and stabilize disturbed soils.
2. Construction and drilling activity will not be conducted using frozen or saturated soil material during periods when watershed damage or excessive rutting is likely to occur.
3. Remove all available topsoil (depths vary from 4 inches on ridges to 12+ inches in bottoms) from constructed well locations including areas of cut and fill, and stockpile at the site. Topsoil will also be salvaged for use in reclamation on all other areas of surface disturbance (roads, pipelines, etc.). Clearly segregate topsoil from excess spoil material. Any topsoil stockpiled for one year or longer will be signed and stabilized with annual ryegrass or other suitable cover crop.
4. The operator will not push soil material and overburden over side slopes or into drainages. All soil material disturbed will be placed in an area where it can be retrieved without creating additional undue surface disturbance and where it does not impede watershed and drainage flows.

5. Construct the backslope no steeper than 1½:1, and construct the foreslope no steeper than 2:1, unless otherwise directed by the BLM AO.
6. Maintain a minimum 20-foot undisturbed vegetative border between toe-of fill of pad and/or pit areas and the edge of adjacent drainages, unless otherwise directed by the BLM AO.
7. To minimize electrocution potential to raptors, all overhead electrical power lines will be constructed to standards identified by the Avian Power Line Interaction Committee (1996) standards and additional standards identified in the PRB FEIS Biological Opinion (Volume 3, Appendix K, page 43).
8. The reserve pit will be oriented to prevent collection of surface runoff. After the drilling rig is removed, the operator may need to construct a trench on the uphill side of the reserve pit to divert surface drainage around it. If constructed, the trench will be left intact until the pit is closed.
9. The reserve pit will be lined with an impermeable liner if permeable subsurface material is encountered. An impermeable liner is any liner having a permeability less than 10^{-7} cm/sec. The liner will be installed so that it will not leak and will be chemically compatible with all substances that may be put in the pit. Liners made of any man-made synthetic material will be of sufficient strength and thickness to withstand normal installation and pit use. In gravelly or rocky soils, a suitable bedding material such as sand will be used prior to installing the liner.
10. The reserve pit will be constructed so that at least half of its total volume is in solid cut material (below natural ground level).
11. Culverts will be placed on channel bottoms on firm, uniform beds, which have been shaped to accept them, and aligned parallel to the channel to minimize erosion. Backfill will be thoroughly compacted.
12. All culverts will be appropriately sized in accordance with standards in BLM Manual 9113.
13. Construction and other project-related traffic will be restricted to approved routes. Cross-country vehicle travel will not be allowed.
14. Maximum design speed on all operator constructed and maintained roads will not exceed 25 miles per hour.

15. During construction, emissions of particulate matter from well pad and road construction will be minimized by application of water or other non-saline dust suppressants with at least 50 percent control efficiency. Dust inhibitors (surfacing materials, non-saline dust suppressants, and water) will be used as necessary on unpaved roads that present a fugitive dust problem. The use of chemical dust suppressants on public surface will require prior approval from the BLM AO.
16. Operators are required to obtain a National Pollution Discharge Elimination System (NPDES) Storm Water Permit from the Wyoming DEQ for any projects that disturb five or more acres (changing to one acre in March 2005). This general construction storm water permit must be obtained from WDEQ prior to any surface disturbing activities and can be obtained by following directions on the WDEQ website at <http://deq.state.wy.us>. Further information can be obtained by contacting Barb Sahl at (307) 777-7570.
17. The operator shall submit a Sundry Notice (Form 3160-5) to BLM for approval prior to construction of any new surface disturbing activities that are not specifically addressed in the approved APD or POD Surface Use Plan.

C. Operations/Maintenance

1. Confine all equipment and vehicles to the access roads, pads, and areas specified in the approved APD or POD.
2. All waste, other than human waste and drilling fluids, will be contained in a portable trash cage. This waste will be transported to a State approved waste disposal site immediately upon completion of drilling operations. No trash or empty barrels will be placed in the reserve pit or buried on location. All state and local laws and regulations pertaining to disposal of human and solid waste will be complied with.
3. Rat and mouse holes shall be filled and compacted from the bottom to the top immediately upon release of the drilling rig from the location.
4. 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. Pesticides shall be used only in accordance with their registered uses and within limitations imposed by the Secretary of Interior. Prior to the use of pesticides on public land, the holder shall obtain from the BLM AO written approval of a plan showing the type and quantity of material to be used, pest(s) to be controlled, method of application, location of storage and disposal of containers, and any other information deemed necessary by the AO to such use.

5. Sewage shall be placed in a self-contained, chemically treated porta-potty on location.

6. The operator and their contractors shall ensure that all use, production, storage, transport and disposal of hazardous and extremely hazardous materials associated with the drilling, completion and production of this well will be in accordance with all applicable existing or hereafter promulgated federal, state and local government rules, regulations and guidelines. All project related activities involving hazardous materials will be conducted in a manner to minimize potential environmental impacts. In accordance with OSHA requirements, a file will be maintained onsite containing current Material Safety Data Sheets (MSDS) for all chemicals, compounds and/or substances which are used in the course of construction, drilling, completion and production operations.

7. Produced fluids shall be put in test tanks on location during completion work. Produced water will be put in the reserve pit during completion work per Onshore Order #7.

8. The only fluids/waste materials which are authorized to go into the reserve pit are RCRA exempt exploration and production wastes. These include:
 - drilling muds & cuttings
 - rigwash
 - excess cement and certain completion & stimulation fluids defined by EPA as exempt.

It does not include drilling rig waste, such as:

- spent hydraulic fluids
- used engine oil
- used oil filter
- empty cement, drilling mud, or other product sacks
- empty paint, pipe dope, chemical or other product containers
- excess chemicals or chemical rinsate

Any evidence of non-exempt wastes being put into the reserve pit may result in the BLM AO requiring specific testing and closure requirements.

9. Operators are advised that prior to installation of any oil and gas well production equipment which has the potential to emit air contaminants, the owner or operator of the equipment must notify the Wyoming Department of Environmental Quality, Air Quality Division (phone 307-777-7391) to determine permit requirements. Examples of pertinent well production equipment include fuel-fired equipment (e.g., diesel generators), separators, storage tanks, engines and dehydrators.

10. If this well is drilled during the fire season (June-October), the operator shall institute all necessary precautions to ensure that fire hazard is minimized, including but not limited to

mowing vegetation on the access route(s) and well location(s), keeping firefighting equipment readily available when drilling, etc.

D. Dry Hole/Reclamation

1. All disturbed lands associated with this project, including the pipelines, access roads, water management facilities, etc will be expediently reclaimed and reseeded in accordance with the surface use plan and any pertinent site specific COAs.
2. Disturbed lands will be re-contoured back to conform with existing undisturbed topography. No depressions will be left that trap water or form ponds.
3. The fluids and mud must be dry in the reserve pit before re-contouring pit area. The operator will be responsible for re-contouring of any subsidence areas that develop from closing a pit before it is completely dry. The plastic pit liner (if any) will be cut off below grade and properly disposed of at a state authorized landfill before beginning to re-contour the site.
4. Before the location has been reshaped and prior to redistributing the topsoil, the operator will rip or scarify the drilling platform and access road on the contour, to a depth of at least 12 inches. The rippers are to be no farther than 24 inches apart.
5. Distribute the topsoil evenly over the entire location and other disturbed areas. Prepare the seedbed by disking to a depth of 4-to-6 inches following the contour.
6. Phased reclamation plans will be submitted to BLM for approval prior to individual APD facility abandonment via a Notice of Intent (NOI) Sundry Notice. Individual facilities, such as well locations, pipelines, discharge points, impoundments, etc. need to be addressed in these plans as they are no longer needed. Individual items that will need to be addressed in reclamation plans include:
 - Pit closure. BLM may require closure prior to 90 days in some cases due to land use or environmental concerns.
 - Configuration of reshaped topography, drainage systems, and other surface manipulations.
 - Waste disposal.
 - Revegetation methods, including specific seed mix (pounds pure live seed/acre) and soil treatments (seedbed preparation, fertilization, mulching, etc.). On private surface, the landowner should be consulted for the specific seed mix.
 - Other practices that will be used to reclaim and stabilize all disturbed areas, such as water bars, erosion fabric, hydro-mulching, etc.

- An estimate of the timetables for beginning and completing various reclamation operations relative to weather and local land uses.
 - Methods and measures that will be used to control noxious weeds, addressing both ingress and egress to the individual well.
 - Decommissioning/removal of all surface facilities.
7. BLM will not release the performance bond until all disturbed areas associated with the APD have been successfully re-vegetated (evaluation will be made after the second complete growing season) and has met all other reclamation goals of the surface owner and surface management agency.
 8. A Notice of Intent to Abandon and a Subsequent Report of Abandonment must be submitted for abandonment approval.
 9. For performance bond release approval, a Final Abandonment Notice (with a surface owner release letter on split-estate) must be submitted prior to a final abandonment evaluation by BLM.
 10. Soil fertility testing and the addition of soil amendments may be required to stabilize some disturbed lands.
 11. Any mulch utilized for reclamation needs to be certified weed free.
 12. Waterbars are to be constructed at least one (1) foot deep, on the contour with approximately two (2) feet of drop per 100 feet of waterbar to ensure drainage, and extended into established vegetation. All waterbars are to be constructed with the berm on the downhill side to prevent the soft material from silting in the trench. The initial waterbar should be constructed at the top of the backslope. Subsequent waterbars should follow the following general spacing guidelines:

Slope (percent)	Spacing Interval (feet)
<2	200
2 – 4	100
4 – 5	75
>5	50

E. Producing Well

1. Landscape those areas not required for production to the surrounding topography as soon as possible. The fluids and mud must be dry in the reserve pit before re-contouring pit area. The operator will be responsible for re-contouring and reseeding of any subsidence areas that develop from closing a pit before it is completely dry.

2. Reduce the backslope to 2:1 and the foreslope to 3:1, unless otherwise directed by the BLM AO. Reduce slopes by pulling fill material up from foreslope into the toe of cut slopes.
3. Production facilities (including dikes) must be placed on the cut portion of the location and a minimum of 15 feet from the toe of the back cut unless otherwise approved by the BLM AO.
4. Any spilled or leaked oil, produced water or treatment chemicals must be reported in accordance with NTL-2A and immediately cleaned up in accordance with BLM requirements. This includes clean-up and proper disposition of soils contaminated as a result of such spills/leaks.
5. Distribute stockpiled topsoil evenly over those areas not required for production and reseed as recommended.
6. Upgrade and maintain access roads and drainage control (e.g., culverts, drainage dips, ditching, crowning, surfacing, etc.) as necessary and as directed by the BLM AO to prevent soil erosion and accommodate safe, environmentally-sound access.
7. Prior to construction of production facilities not specifically addressed in the APD, the operator shall submit a Sundry Notice to the BLM AO for approval.
8. If not already required prior to constructing and drilling the well location, the operator shall immediately upgrade the entire access road to BLM standards (including topsoiling, crowning, ditching, drainage culverts, surfacing, etc.) to ensure safe, environmentally-sound, year-round access. This requirement does not supersede or apply where specific road requirements are addressed in the APF surface use plan (e.g., two track road, spot upgrade, etc.).