

**DECISION RECORD
FOR
Trend Exploration I, LLC
11 Trend Wells EA NO-WY-070-11-38**

DECISION: I approve Alternative B as described in the attached Environmental Assessment (EA) and to authorize the following Application for Permit to Drill (APD) for Trend:

Well Name & Number	QTR	Sec.	T	R	Lease #
Federal 12-32	SWNW	32	56N	72W	WYW-129512
Federal 21-11	NENW	11	55N	73W	WYW-0321213
Federal 41-17	NENE	17	55N	72W	WYW-138421
Federal 44-8A	SESE	8	55N	72W	WYW-138421
Federal 34-8	SWSE	8	55N	72W	WYW-138421
Federal 34-31	SWSE	31	56N	72W	WYW-129512
Federal 41-6	NENE	6	55N	72W	WYW-145537
Federal 43-31	NESE	31	56N	72W	WYW-129512
Federal 14-32	SWSW	32	56N	72W	WYW-129512
Federal 42-31	SENE	31	56N	72W	WYW-129512
Federal 44-31	NENE	6	55N	72W	WYW-129512

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 adherent with all mitigation and monitoring requirements contained within the Resource Management Plan Amendment for the Powder River Oil and Gas Project (RMP) approved April 30, 2003 and adherence with the attached Conditions of Approval.

RATIONALE: The decision to authorize Alternative B, as described in the attached Environmental Assessment (EA), is based on the following:

1. The Operator, in their APD, has committed to:
 - Comply with all applicable Federal, State and Local laws and regulations.
 - Obtain the necessary permits from other agencies for the drilling, completion and production of these wells including water rights appropriations, and relevant air quality permits.
2. The Operator has certified that a Surface Use Agreement has been reached with the Landowner.
3. Alternative B will not result in any undue or unnecessary environmental degradation.
4. It is in the public interest to approve these wells as this development will help meet the nation's future needs for energy reserves, and will help to stimulate local economies by maintaining stability for the workforce
5. Mitigation measures from the range of alternatives were selected to best meet the purpose and need, and will be applied by the BLM to alleviate environmental impacts.
6. Alternative B is the environmentally-preferred Alternative.

7. Approval of this alternative is in conformance with the Final Powder River Basin Oil and Gas Project Environmental Impact Statement and Proposed Plan Amendment (PRB FEIS) (January 2003), Record of Decision and Resource Management Plan Amendments for the Powder River Basin Oil and Gas Project (PRB FEIS ROD), (refer to Appendix E of PRB FEIS ROD page E-1), and the Approved Resource Management Plan and Amendments (1985), Buffalo Field Office (BFO), April 2001, and April 2003.

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.

fo Paul Beelo
Field Manager

11/9/10
Date

**FINDING OF NO SIGNIFICANT IMPACT
FOR
Trend Exploration I, LLC
11 Trend Wells EA NO-WY-070-11-38**

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.

Paul Beels
Field Manager

11/9/10
Date

ENVIRONMENTAL ASSESSMENT
TREND EXPLORATION I, LLC.
11 Trend Wells EA # WY-070-11-38

1. INTRODUCTION

This site-specific analysis tiers into and incorporates by reference the information and analysis contained in the *Final Environmental Impact Statement and Proposed Plan Amendment for the Powder River Basin Oil and Gas Project* (PRB FEIS), (January, 2003), and the PRB FEIS Record of Decision (ROD) and Resource Management Plan Amendments for the PRB Oil and Gas Project (April 2003) pursuant to 40 CFR 1508.28 and 1502.21. These documents are available for review at the BLM Buffalo Field Office (BFO) or on our website. This project environmental assessment (EA) addresses site-specific resources and impacts that were not covered within the PRB FEIS.

1.1. PURPOSE AND NEED

The purpose and need of this EA is to determine how and under what conditions to allow the operator to exercise lease rights granted by the United States to develop the oil and gas resources on federal leaseholds as described in their proposed action.

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

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

The BLM recognizes the extraction of oil is essential to meeting the nation's future needs for energy. As a result, private exploration and development of federal oil reserves are integral to the agencies' oil and gas leasing programs under the authority of the Mineral Leasing Act of 1920, as amended, and the Federal Land Policy Management Act (FLPMA) of 1976. The oil and gas leasing program managed by BLM encourages the development of domestic oil and gas reserves and reduction of the U.S. dependence on foreign sources of energy.

This action responds to the goals and objectives outlined in the 1985 Buffalo Resource Management Plan (RMP), the 2001 Approved RMP for the Public Lands Administered by the BLM BFO and the 2003 PRB FEIS and Amendments. This action helps move the Project Area toward desired conditions for mineral development with appropriate mitigation consistent with the goals, objectives and decisions outlined in these two documents.

1.2. Conformance with Applicable Land Use Plan and Other Environmental Assessments:

The proposed action conforms to the terms and the conditions of the 1985 Buffalo RMP, the 2001 Approved RMP, the 2003 PRB FEIS, and the PRB FEIS ROD and RMP Amendments (2003) as required by 43 CFR 1610.5.

2. ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1. Alternative A – No Action

This alternative would 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.

2.2. Alternative B Proposed Action
OPERATOR/APPLICANT: Trend Exploration I, LLC

PROJECT NAME: Trend Wells: 11 APDs

The proposed action is to drill eleven conventional oil wells. The action would be subject to the attached Conditions-of-Approval, for drilling of an oil well on private surface/federal mineral lands within the BFO 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 APDs for a map showing the proposed access road, existing roads and well location and supporting infrastructure.

Well Locations:

Well Name & Number	QTR	Sec.	T	R	Total Depth
Federal 12-32	SWNW	32	56N	72W	9500 ft
Federal 21-11	NENW	11	55N	73W	9500 ft
Federal 41-17	NENE	17	55N	72W	9500 ft
Federal 44-8A	SESE	8	55N	72W	9500 ft
Federal 34-8	SWSE	8	55N	72W	9500 ft
Federal 34-31	SWSE	31	56N	72W	9500 ft
Federal 41-6	NENE	6	55N	72W	9500 ft
Federal 43-31	NESE	31	56N	72W	9500 ft
Federal 14-32	SWSW	32	56N	72W	9500 ft
Federal 42-31	SENE	31	56N	72W	9500 ft
Federal 44-31	NENE	6	55N	72W	9500 ft

The proposed action involves:

Activity	Length (feet)	Width (feet)	Acres of Disturbance
Federal 12-32 Constructed Pad/Tank Battery	525	225	3.8
Cut/fills & Topsoil/spoil stockpiles	Varies	Varies	1.0
Trend Federal 12-32 Access Road	422	45	.40
Pipeline: 3” steel, located on pad			
Total Disturbance for Trend Federal 12-32			5.2

Note: Tank battery on this location will service 5 wells

Activity	Length (feet)	Width (feet)	Acres of Disturbance
Federal 21-11 Constructed Pad w/ Tank Battery	325	185	1.4
Cut/fills & Topsoil/spoil stockpiles	Varies	Varies	1.0
Federal 21-11 Access Road	1800	45	1.9
Pipeline: 3", steel, located on pad			
Total Disturbance for Federal 21-11			4.3

Activity	Length (feet)	Width (feet)	Acres of Disturbance
Federal 41-17 Constructed Pad w/ Tank Battery	325	190	1.4
Cut/fills & Topsoil/spoil stockpiles	Varies	Varies	1.0
Federal 41-17 Access Road	1480	45	1.5
Pipeline: 3", steel, located on pad			
Total Disturbance for Federal 41-17			3.9

Activity	Length (feet)	Width (feet)	Acres of Disturbance
Federal 44-8A Constructed Pad	325	190	1.4
Cut/fills & Topsoil/spoil stockpiles	Varies	Varies	1.0
Federal 44-8A Access Road	1035	45	1.1
Pipeline: 3", steel, coridored w/ proposed access road	2330		
Total Disturbance for Federal 44-8A			3.8

Activity	Length (feet)	Width (feet)	Acres of Disturbance
Federal 34-8 Constructed Pad	325	190	1.4
Cut/fills & Topsoil/spoil stockpiles	Varies	Varies	1.0
Federal 34-8 Access Road	1030	45	1.1
Pipeline: 3", steel, coridored w/ proposed access road	1030		
Total Disturbance for Federal 34-8			3.5

Activity	Length (feet)	Width (feet)	Acres of Disturbance
Federal 34-31 Constructed Pad, w/ borrow areas			~3.5
Cut/fills & Topsoil/spoil stockpiles	Varies	Varies	1.0
Federal 34-31 Access Road, engineered	317	50	.40
Pipeline: 3", steel, coridored w/ proposed/existing access road	6600	50	7.2
Total Disturbance for Federal 34-31			12.1

Note: see engineered pad drawings for design parameters; ~6300 ft of pipeline will corridor an existing oil/gas road

Activity	Length (feet)	Width (feet)	Acres of Disturbance
Federal 41-6 Constructed Pad	325	210	1.6
Cut/fills & Topsoil/spoil stockpiles	Varies	Varies	1.0
Federal 41-6 Access Road	2112	45	2.2
Pipeline: 3", steel, coridored w/ proposed access	1900		
Total Disturbance for Federal 41-6			4.8

Activity	Length (feet)	Width (feet)	Acres of Disturbance
Federal 43-31 Constructed Pad	325	175	1.3
Cut/fills & Topsoil/spoil stockpiles	Varies	Varies	1.0
Federal 43-31 Access Road, engineered	2006	50	2.0
Pipeline: 3", steel, corrodred w/ proposed/existing access road	3030		
Total Disturbance for Federal 43-31			4.6

Activity	Length (feet)	Width (feet)	Acres of Disturbance
Federal 14-32 Constructed Pad	300	175	1.2
Cut/fills & Topsoil/spoil stockpiles	Varies	Varies	1.0
Federal 14-32 Access Road (engineered)	370	50	.40
Pipeline: 3", steel	2370		
Total Disturbance for Federal 14-32			2.6

Note: 2000 ft of pipeline will be corrodred w/ proposed access for 43-31 well

Activity	Length (feet)	Width (feet)	Acres of Disturbance
Federal 42-31 Constructed Pad	325	200	1.5
Cut/fills & Topsoil/spoil stockpiles	Varies	Varies	1.0
Federal 42-31 Access Road	740	45	.80
Pipeline: 3", steel, corrodred w/ access road	1320		
Total Disturbance for Federal 42-31			3.3

Activity	Length (feet)	Width (feet)	Acres of Disturbance
Federal 44-31 Constructed Pad	325	175	1.3
Cut/fills & Topsoil/spoil stockpiles	Varies	Varies	1.0
Federal 44-31 Access Road	370	45	.4
Pipeline: 3", steel, corrodred w/ proposed access	1825		
Total Disturbance for Federal 44-31			2.7

Note: 1455 ft of pipeline corrodred w/ proposed access for the 41-6 well

The proposed well locations require the construction of 11 engineered (cut & fill) well pads, engineered and template designed roads. The total surface disturbance associated with the construction of these locations and associated infrastructure will be approximately 58.0 acres. These figures include disturbance associated with the well pads, the spoil and topsoils storage areas, and the construction equipment and vehicle disturbance. The access roads will be constructed to meet the standards of the anticipated traffic flow and all-weather requirements. Road construction will include ditching, draining, graveling, and crowning of the roadbed.

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 project.

AFFECTED SURFACE OWNERS:

Jayne Harris as Trustee of the Jayne Harris Revocable Trust
Bureau of Land Management

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

COUNTY: Campbell

For a detailed description of design features and construction practices associated with the proposed action, refer to the Surface Use Plan (SUP) and Drilling Plan included with the APD. Also see the subject APD for maps showing the proposed well location and associated facilities described above.

Implementation of committed mitigation measures contained in the SUP and Drilling Plan, in addition to the Standard Conditions of Approval (COAs) contained in the PRB FEIS Record of Decision Appendix A, are incorporated and analyzed in this alternative.

Additionally, the Operator, in their APD, has committed to:

1. Comply with all applicable Federal, State and Local laws and regulations.
2. Obtain the necessary permits from other agencies for the drilling, completion and production of these wells including water rights appropriations, and relevant air quality permits.
3. The Operator has certified that a Surface Use Agreement has been reached with the Landowner(s).
4. The Operator has certified that a copy of the SUP has been provided to the relevant Landowner(s).

3. AFFECTED ENVIRONMENT

A Notice of Staking (NOS) field inspection of the proposed wells and associated infrastructure was conducted on 8/10/10. The APDs were received on 10/20/10.

This section describes the environment that would be affected by implementation of the Alternatives described in Section 2. Aspects of the affected environment described in this section focus on the relevant major issues.

3.1. Topographic Characteristics

The project area is located approximately twenty five miles north of Gillette, Wyoming. Elevations within the project area range from 3750 to 4940 feet above sea level. The topography throughout the project area consists of ephemeral bottomlands rising to ponderosa and juniper breaks with moderate sloping ridges and draws. This area is also characterized by an abundance of scoria outcrops. The ephemeral drainage of White Tail Creek drains the area. The climate in the area is semi-arid, averaging 15-17” inches of precipitation annually, more that 60% of which occurs between May and September. Coal Bed Natural Gas (CBNG) development exists throughout the project area, as well as existing conventional oil well development. The majority of the surface ownership within the area is private, with livestock grazing and native hay production being other land uses within the general area.

If any of the eleven proposed wells are producers, future oil and gas development could occur in the following areas: T.55N. , R.72W., Sec. 4-9, 16-18 and T.56N. , R.72W., Sec. 31-33.

3.2. Vegetation & Soils

3.2.1. 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

project area primarily consists of two ecological sites. The predominant ecological sites occurring within the proposed POD are found to be Loamy and Shallow Loamy.

Loamy Site description and Plant community

This site occurs on land that is nearly level, or up to 50% slopes. Landform: Hill slopes with associated alluvial fans & stream terraces.

The soils of this site are deep to moderately deep (greater than 20 inches 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.

The plant community is defined as Mixed Sagebrush/Grass with a species composition of; Green needlegrass, Western wheatgrass, Needleandthread, Big bluestem, Big sagebrush and Blue grama.

Shallow Loamy Site description and Plant community.

This site occurs on steep slopes and ridge tops, but may occur on all slopes. Landform: Hill sides, ridges and escarpments.

The soils of this site are shallow (less than 20 inches to bedrock) well-drained soils formed in alluvium over residuum or residuum. These soils have moderate permeability and may occur on all slopes. The bedrock may be any kind which is virtually impenetrable to plant roots, except igneous. The surface soil will have one or more of the following textures: very fine sandy loam, loam, silt loam, sandy clay loam, silty clay loam, and clay loam. Thin ineffectual layers of other textures are disregarded. Layers of the soil most influential to the plant community vary from 3 to 6 inches thick.

The plant community is defined as Mixed Sagebrush/Grass with a species composition of; Bluebunch wheatgrass, Western wheatgrass, Blue grama, Green needlegrass, Little bluestem, Needleandthread, Big sagebrush.

Species observed throughout the project area included: Big Sagebrush, Prairie junegrass, threadleaf sedge, bluebunch wheatgrass, blue grama, little bluestem, green needlegrass, needleandthread, cheatgrass, western wheatgrass, prairie sandreed, buckwheat, crested wheat, curly cup gumweed, prickly pear cactus, yucca, skeletonweed, wild rose, and intermediate wheatgrass. In the southern area of the POD, ponderosa pine and junipers were observed. Differences in dominant species within the project area vary with soil type, aspect and topography.

3.2.1.1. Invasive Species

No state-listed noxious weeds and invasive/exotic plant infestations were discovered by a search of inventory maps and/or databases or during subsequent field investigation by the proposed project proponent.

Cheatgrass or downy brome (*Bromus tectorum*) and to a lesser extent, Japanese brome (*B. japonicus*) are known to exist in the affected environment. These two species are found in high densities and numerous locations throughout NE Wyoming.

3.3. Wildlife

Several resources were consulted to identify wildlife species that may occur in the proposed project area. Resources that were consulted include the 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 habitat assessment and wildlife inventory surveys were performed by Arcadis U.S., Inc. Arcadis performed surveys for mountain plover, sharp-tailed grouse, greater sage-grouse, raptor nests, and prairie dog colonies according to Powder River Basin Interagency Working Group (PRBIWG) accepted protocol in 2009, and 2010. Surveys were also conducted for Ute ladies'-tresses orchid and blowout penstemon. No formal surveys were conducted for any additional BLM sensitive species.

The BLM biologist conducted field visits on 8/10/2010. During visit and other office time, the biologist verified the wildlife survey information, evaluated impacts to wildlife resources, and recommended project modifications where wildlife issues arose. Wildlife species common to the habitat types present are identified in the PRB FEIS (pg 3-114). Species that have been identified in the project area or that have been noted as being of special importance are described below.

WGFD is the agency responsible for management of wildlife populations in the state of Wyoming. WGFD has developed several guidance documents that BLM BFO wildlife staff relies upon in evaluating impacts to wildlife and wildlife habitats. WGFD documents used to analyze the proposed project under the current analysis are referenced in this section.

In its *Recommendations for Development of Oil and Gas Resources within Important Wildlife Habitats* (WGFD 2009a), WGFD developed impact thresholds to evaluate impacts to wildlife from oil and gas development. For species or habitats discussed in this EA where impact thresholds have been developed, those thresholds will be disclosed and discussed both in relation to the current conditions (Affected Environment) and in relation to reasonable foreseeable development, including development associated with the proposed project (Impacts Analysis). Moderate impacts occur when impairment of habitat function becomes discernable. High impacts occur when impairment of habitat function increases. Extreme impacts occur where habitat function is substantially impaired. Mitigation for each level of impact is discussed in the guidelines. Thresholds for impacts are generally determined by well densities.

3.3.1. Threatened, Endangered, Proposed, Candidate, and BLM Sensitive Species

3.3.1.1. Threatened and Endangered Species

Threatened, Endangered, Candidate and Proposed species that will be impacted beyond the level analyzed within the PRB FEIS are described below.

3.3.1.1.1. Black-footed ferret

The black-footed ferret is listed as Endangered under the ESA. The affected environment for black-footed ferrets is discussed in the PRB FEIS on pg. 3-175. Black-footed ferrets require at least 1,000 acres of prairie dog colonies, separated by no more than 1.5 km, for survival (USFWS 1989). Two black-tailed prairie dog colonies were identified within the Trend POD boundary by Arcadis and BLM biologist. The two black-tailed prairie dog colonies identified totaled approximately 11.12 acres in size and are separated by 0.65 miles. Black-footed ferrets are not expected to be present within the project area.

3.3.1.1.2. Blowout Penstemon

Blowout penstemon is listed as Endangered under the ESA. It is a regionally endemic species with documented populations in the Sand Hills of west-central Nebraska and the northeastern Great Divide Basin of Carbon County, Wyoming. Suitable blowout penstemon habitat consists of sparsely vegetated and early successional, shifting sand dunes and blowout depressions created by wind. In Wyoming, the habitat is typically found on sandy aprons or the lower half of steep sandy slopes deposited at the base of granitic or sedimentary mountains or ridges. The Trend project area does not contain areas with these characteristics, and blowout penstemon is not expected to occur.

3.3.1.1.3. Ute Ladies'-Tresses Orchid

The Ute ladies'-tresses orchid (ULT) is listed as Threatened under the ESA. The affected environment for ULT is discussed in the PRB FEIS on pg. 3-175.

The PRB FEIS reported that only four orchid populations had been documented within Wyoming, but since the writing of that document, five additional sites were located in 2005 and one in 2006 (Heidel pers. comm.). The new locations were in the same drainages as the original populations, with two on the same tributary and within a few miles of an original location. Drainages with documented orchid populations include Wind Creek and Antelope Creek in northern Converse County, Bear Creek in northern Laramie and southern Goshen Counties, Horse Creek in Laramie County, and Niobrara River in Niobrara County. A Wyoming Natural Diversity Database (WYNDD) model predicts undocumented populations may be present particularly within southern Campbell and northern Converse Counties.

Arcadis surveyed for potential Ute ladies'-tresses habitat in the project area and concluded that the area has limited potential to support the species. No perennial streams were located and the ephemeral drainages were dominated by upland vegetation.

3.3.1.2. Proposed Species

3.3.1.2.1. Mountain Plover

The affected environment for mountain plover is discussed in the PRB FEIS on pg. 3-177 to 3-178. At the time the PRB FEIS was written, the mountain plover was proposed for listing as a threatened species under the ESA. In 2003, USFWS withdrew the proposal, finding that the population was larger than had been thought and was no longer declining. In addition to being listed as a Wyoming BLM sensitive species, mountain plovers are a WGFDD Species of Greatest Conservation Need (SGCN), with a rating of Native Species Status 4 (NSS4). This rating means the species is apparently secure, although it may be quite rare in parts of its range, especially at the periphery. The Wyoming Bird Conservation Plan rates them as a Level I species, indicating they are clearly in need of conservation action. They are also listed by USFWS as a BCC for Region 17.

No mountain plover breeding or nesting habitat has been noted in the project area. The vegetative shrub and grass height throughout the majority of the area consistently exceeded four inches and ground cover was greater than 30%. Although two black-tailed prairie dog colonies were present, they were overgrown with vegetation; the high amount of cover may be partly attributed to above average spring precipitation during 2010 and percent cover may be lessened during years with average precipitation or drought events. Prairie dog colonies less than 40 acres of size are considered to be of insufficient size to expect occurrence of mountain plover (USFWS 2006). The prairie dog colonies within the project area only totaled 11.12 acres which does not meet patch size requirements.

3.3.1.3. Candidate Species

3.3.1.3.1. Greater Sage-grouse

In 2010, USFWS determined that the sage-grouse was warranted for federal listing across its range, but listing was precluded by other higher priority listing actions. In addition to being listed as a Wyoming BLM sensitive species, sage-grouse are listed as a WGFDD species of greatest conservation need, because populations are declining and they are experiencing ongoing habitat loss. The Wyoming Bird Conservation Plan rates them as a Level I species, indicating they are clearly in need of conservation action. They are also listed by USFWS as a BCC for Region 17.

The State Wildlife Agencies' Ad Hoc Committee for Consideration of Oil and Gas Development Effects to Nesting Habitat (2008) recommends that impacts be considered for leks within four miles of oil and gas developments. WGFDD records indicate that two sage-grouse leks occur within four miles of the

project area. These two lek sites are identified in the following table.

Table 3.1 Sage-grouse leks within 4 miles of the Trend project area

Lek Name	Legal Location	Distance from Project Area (mi)	Occupied?	Existing WYGF D Category of Impact
Elk Creek Road NE	T56N, R72W, S18 SWSW	1.3	YES	Low
Elk Creek Road	T56N, R73W, S26 SWSE	0.41	YES	Extreme

In its *Recommendations for Development of Oil and Gas Resources within Important Wildlife Habitats* (2009), WYGF D categorized impacts to sage-grouse by number of well pad locations per square mile within two miles of a lek and within identified nesting/brood-rearing habitats greater than two miles from a lek. Moderate impacts occur when well density is between one and two well pad locations per square mile or where there is less than 20 acres of disturbance per square mile. High impacts occur when well density is between two and three well pad locations per square mile or when there are between 20 and 60 acres of disturbance per square mile. Extreme impacts occur when well density exceeds three well pad locations per square mile or when there are greater than 60 acres of disturbance per square mile.

Productive sage-grouse seasonal habitats are characterized by 80% of an area containing between 10-30% sagebrush canopy cover intermixed with 15% grass/forb cover (Connelly et. al. 2000). The sagebrush steppe habitat within 2.0 miles of the project area was considered suitable nesting and brood rearing habitat. The big sagebrush canopy cover within the project area was qualitatively estimated to be greater than 10% and shrub height within ephemeral draws was considered sufficient to allow for nest concealment. Also uplands and drainages within the project area contained a diverse mix of forbs, which could potentially be used by sage-grouse and their broods during spring and summer months.

3.3.1.3.2. 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. Sage sparrows prefer large continuous stands of sagebrush, and Brewer's sparrows are associated closely with sagebrush habitats having abundant scattered shrubs and short grass (Paige and Ritter 1999). Species observed by Arcadis and the BLM biologist include sage thrashers and Brewer's sparrows. The majority of the Trend project area provides suitable habitat for sagebrush obligates.

3.3.2. Migratory Birds

The affected environment for migratory birds is discussed in the PRB FEIS (pp. 3-150 to 3-153). Migratory birds are those that migrate for the purpose of breeding and foraging at some point in the year. According to Instruction Memorandum No. 2008-050, BLM must include migratory birds in every NEPA analysis of actions that have the potential to affect migratory bird species of concern in order to fulfill its obligations under the Migratory Bird Treaty Act.

The WYGF D Wyoming Bird Conservation Plan (Nicholoff 2003) identified three groups of high-priority bird species in Wyoming: Level I – those that clearly need conservation action, Level II – species where the focus should be on monitoring, rather than active conservation, and Level III – species that are not

otherwise of high priority but are of local interest. The primary vegetation throughout the project area is sagebrush grassland with a few cottonwood trees within draws. Many species that are of high management concern use these areas for their primary breeding habitats (Saab and Rich 1997).

Nationally, grassland and shrubland birds declined more consistently in the last 30 years than any other ecological association of birds (WGFD 2009). The BLM and FWS MOU To Promote the Conservation of Migratory Birds (April 2010) lists commitments by the BLM which are not yet provided as implementing directives. Species that may occur in these vegetation types in northeast Wyoming, according to the Wyoming Bird Conservation Plan, are listed in Table 3.2 and are grouped by Level as identified in the Plan.

Table 3.2 High priority bird species that occur in the major vegetation type within the Trend POD project area

Level	Species	Wyoming BLM Sensitive
Level I	Brewer's sparrow	Yes
	Ferruginous hawk	Yes
	Greater sage-grouse	Yes
	Long-billed curlew	
	McCown's longspur	
	Mountain plover	Yes
	Sage sparrow	
	Short-eared owl	
	Upland sandpiper	
	Western burrowing owl	Yes
Level II	Black-chinned hummingbird	
	Bobolink	
	Chestnut-collared longspur	
	Dickcissel	
	Grasshopper sparrow	
	Lark bunting	
	Lark sparrow	
Level II	Loggerhead shrike	Yes
	Sage thrasher	Yes
	Vesper sparrow	
Level III	Common poorwill	
	Say's phoebe	

The affected environment for migratory birds is discussed in the PRB FEIS (pp. 3-150 to 3-153).

3.3.3. Sensitive Species

Wyoming BLM has prepared a list of sensitive species on which management efforts should be focused towards maintaining habitats under a multiple use mandate. The goals of the policy are to:

- Maintain vulnerable species and habitat components in functional BLM ecosystems
- Ensure sensitive species are considered in land management decisions
- Prevent a need for species listing under the ESA
- Prioritize needed conservation work with an emphasis on habitat

The authority for the sensitive species 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. BLM Wyoming sensitive species that will be impacted beyond the level analyzed within the PRB FEIS are described below.

3.3.3.1. Bald Eagle

The affected environment for bald eagles is described in the PRB FEIS on pg. 3-175. At the time the PRB FEIS was written, the bald eagle was listed as a threatened species under the ESA. Due to successful recovery efforts, it was removed from the ESA on 8 August 2007. The bald eagle remains under the protection of the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

In addition to being listed as a Wyoming BLM sensitive species, bald eagles are a WGFD SGCN with a NSS2 rating, due to populations being restricted in numbers and distribution, ongoing loss of habitat, and sensitivity to human disturbance. The Wyoming Bird Conservation Plan rates them as a Level I species, indicating they are clearly in need of conservation action. They are also listed by USFWS as a BCC for Region 17.

Cottonwood draws are present within the project area providing suitable nesting/roosting habitat, although the area lacks the perennial water sources that the species are known to frequent for foraging. No bald eagle nests are known to be present in the project area. The closest bald eagle winter roost occurs approximately 2.06 miles from the project area and there is also no winter roosting habitat within the project area. Bald eagle use within the project area is limited to occasional use for diurnal foraging and roosting behavior.

3.3.3.2. Ferruginous Hawk

The affected environment for ferruginous hawk is discussed in the PRB FEIS on pg. 3-183. In addition to being listed as a Wyoming BLM sensitive species, ferruginous hawks are a WGFD SGCN, with a rating of NSS3 because the species is widely distributed, population status and trends are unknown but are suspected to be stable, they are experiencing ongoing loss of habitat, and they are sensitive to human disturbance. The Wyoming Bird Conservation Plan rates them as a Level I species, indicating they are clearly in need of conservation action. They are also listed by USFWS as a BCC for Region 17.

According to the BLM raptor database, ferruginous hawk populations within the Powder River Basin have declined in recent years. Ferruginous hawks are particularly sensitive to human disturbance; pairs may abandon nests even when mildly disturbed during nest construction and incubation (Smith and Murphy 1978, White and Thurow 1985, Olendorff 1993). Furthermore disturbed nests fledge fewer young, and they often are not reoccupied the year following disturbances (White and Thurow 1985). Rather than becoming acclimated to repeated disturbance, ferruginous hawks become sensitized and flush greater distances (White and Thurow 1985), which may result in increased clutch or brood mortality due to exposure, predation, starvation, or nest desertion.

The BLM raptor database indicates that one documented ferruginous hawk nest occurs within the project area (See Table 3.3), and there is also one nest within two miles of the Trend POD. Ferruginous hawk habitat is present and it is likely that the species may use habitat and nest within the POD in the future.

3.3.3.3. Loggerhead Shrike

The affected environment for loggerhead shrike is discussed in the PRB FEIS on pg. 3-187. In addition to being listed as a Wyoming BLM sensitive species, loggerhead shrikes are listed by USFWS as a BCC for Region 17. The Wyoming Bird Conservation Plan rates them as a Level II species, indicating they are in need of monitoring. The project area supports loggerhead shrike habitat, and the species may occur.

3.3.3.4. Western Burrowing Owl

The affected environment for western burrowing owl is discussed in the PRB FEIS on pg. 3-186. In

addition to being listed as a Wyoming BLM sensitive species, burrowing owls are a WGFD SGCN, with a rating of NSS4 because the species is widely distributed, population status and trends are unknown but are suspected to be stable, habitat is restricted or vulnerable without substantial recent or on-going loss, and it may be sensitive to human disturbance. The Wyoming Bird Conservation Plan rates them as a Level I species, indicating they are clearly in need of conservation action, and they are also a USFWS BCC in Region 17. Black-tailed prairie dog colonies provide the primary habitat for burrowing owls (Klute et al. 2003).

Current population estimates for the United States are not well known but trend data suggest declines throughout the burrowing owl range (McDonald et al. 2004). Primary threats are habitat loss and fragmentation, mostly due to intensive agricultural and urban development, and habitat degradation, due to declines in populations of colonial burrowing mammals (Klute et al. 2003).

The BFO raptor database indicates that no burrowing owl nests have been reported within 0.5 mile of the Trend project area. However, prairie dog colonies are documented to occur within the project boundary, and future burrowing owl nesting is possible within the Trend POD boundary.

3.3.3.5. Black-tailed Prairie Dog

The affected environment for black-tailed prairie dogs is discussed in the PRB FEIS (pg 3-179). At the time the PRB FEIS was written, the black-tailed prairie dog was added to the list of candidate species for federal listing in 2000 (USFWS 2000). It was removed from the list in 2004. Wyoming BLM considers black-tailed prairie dogs a sensitive species and continues to afford this species the protections described in the PRB FEIS. The black-tailed prairie dog is a WGFD SGCN, with a rating of NSS3, because populations are declining, and habitat is vulnerable but not undergoing significant loss.

The black-tailed prairie dog is considered common in Wyoming, although its abundance fluctuates with activity levels of Sylvatic plague and the extent of control efforts by landowners. Comparisons with 1994 aerial imagery indicated that black-tailed prairie dog acreage remained stable from 1994 through 2001, but aerial surveys conducted in 2003 indicated that approximately 47% of the prairie dog acreage was impacted by Sylvatic plague and/or control efforts (Grenier et al. 2004). Due to human-caused factors, black-tailed prairie dog populations are now highly fragmented and isolated (Miller et al. 1994). Most colonies are small and subject to potential extirpation due to inbreeding, population fluctuations, and other problems that affect long term population viability, such as landowner poisoning and disease (Primack 1993, Meffe and Carroll 1994, Noss and Cooperrider 1994).

Two black-tailed prairie dog colonies were identified by Arcadis or the BLM biologist totaling approximately 11.12 acres within the Trend project area.

3.3.4. Big Game

Both pronghorn and mule deer were observed during field visits to the project area. WGFD data indicate that the project area contains yearlong range for mule deer and antelope. Yearlong use is when a population of animals makes general use of habitat within the range on a year-round basis. Animals may leave under severe conditions. No crucial big game range is known to occur within the project area. The affected environment for pronghorn and mule deer is discussed in the PRB FEIS on pp. 3-117 to 3-122 and pp. 3-127 to 3-132, respectively.

3.3.5. Raptors

The affected environment for raptors is discussed in the PRB FEIS on pp. 3-141 to 3-148.

Several small stands of ponderosa pine, steep vegetated draws, rocky outcrops, and knolls are located within 0.5 miles of the project location, and provide suitable nest substrate for raptors. Four raptor species

are known to have used nests within 0.5 miles of the project area: ferruginous hawk, red-tailed hawk, great horned owl, and American kestrel. The affected environment for golden eagles is discussed in the PRB FEIS on pp. 3-145 to 3-146. Golden eagles are listed as a Bird of Conservation Concern (BCC) by USFWS for Bird Conservation Region (BCR) Region 17, which encompasses the project area. BCCs are those species that represent USFWS's highest conservation priorities, outside of those that are already listed under ESA. The goal of identifying BCCs is to prevent or remove the need for additional ESA bird listings by implementing proactive management and conservation actions. Golden eagles were also identified as a Level III species in the Wyoming Bird Conservation Plan. Golden eagles are sensitive to extensive human activity around nest sites and are threatened by loss of nesting habitat to industrial development, powerline executions, and other factors (Nicholoff 2003). The WGFD Wyoming Bird Conservation Plan habitat objectives for golden eagles include maintaining open country to provide habitat for small mammals as a food source. Recommendations for management include restricting human activities near nests during peak breeding season; protecting, enhancing, and restoring prey populations; and protecting known nesting territories.

Twenty raptor nest sites have been documented to occur within 0.5 mile of the project boundary. These are listed in the Table 3.3. None of the nests listed were active in 2009 or 2010.

Table 3.3 Documented raptor nests within 0.5 miles of the Trend POD Project Area

BLM ID	UTMs	Legal	Substrate	Year	Condition	Status	Species
867	454003E 4959878N	S36 T56N R73W	GHS	2009	Remnants	INAC	n/a
				2009	Remnants	INAC	n/a
				2008	Remnants	INAC	n/a
				2007	Nest Gone	INAC	n/a
				2007	Poor	INAC	n/a
				2006	Remnants	INAC	n/a
				1998	Unknown	ACTI	FEHA
875	454580E 4958841N	S6 T55N R72W	CTL	2009	Nest Gone	INAC	n/a
				2008	Unknown	DNLO	n/a
				2007	Nest Gone	INAC	n/a
4210	456760E 4961591N	S29 T56N R72W	BOX	2009	Fair	INAC	n/a
				2008	Fair	INAC	n/a
				2007	Good	INAC	n/a
				2006	Excellent	ACTI	RETA
4211	456260E 4959504N	S32 T56N R72W	BOX	2009	Fair	INAC	n/a
				2008	Unknown	INAC	n/a
				2007	Unknown	INAC	n/a
				2006	Unknown	ACTI	AMKE
4212	455154E 4961762N	S30 T56N R72W	BOX	2009	Fair	INAC	n/a
				2009	Good	INAC	n/a
				2008	Fair	INAC	n/a
				2007	Fair	INAC	n/a
				2006	Excellent	ACTI	RETA

BLM ID	UTMs	Legal	Substrate	Year	Condition	Status	Species
4213	455294E 4960372N	S31 T56N R72W	POL	2009	Fair	INAC	n/a
				2009	Good	INAC	n/a
				2008	Excellent	ACTF	RETA
				2007	Excellent	ACTI	GRHO
				2006	Excellent	ACTI	RETA
4214	457289E 4962161N	S29 T56N R72W	BOX	2009	Fair	INAC	n/a
				2008	Fair	INAC	n/a
				2007	Fair	INAC	n/a
				2006	Good	INAC	n/a
4215	454929E 4961903N	S30 T56N R72W	CTD	2009	Remnants	INAC	n/a
				2009	Nest Gone	INAC	n/a
				2008	Remnants	INAC	n/a
				2007	Fair	OCCU	GRHO
				2006	Fair	INAC	n/a
5413	457511E 4962287N	S29 T56N R72W	BOX				
5414	457159E 4961974N	S29 T56N R72W	CTL	2009	Unknown	INAC	n/a
				2008	Unknown	INAC	n/a
				2007	Unknown	OCCU	AMKE
5415	455388E 4960337N	S31 T56N R72W	POL	2009	Poor	INAC	n/a
				2008	Poor	INAC	n/a
				2007	Poor	INAC	n/a
5416	454277E 4962322N	S24 T56N R73W	BOX	2009	Poor	INAC	n/a
				2009	Poor	INAC	n/a
				2008	Poor	INAC	n/a
				2007	Fair	OCCU	GRHO
5417	454136E 4962374N	S24 T56N R73W	CTD	2009	Poor	INAC	n/a
				2009	Poor	INAC	n/a
				2008	Poor	INAC	n/a
				2007	Poor	OCCU	GRHO
5623	454267E 4959000N	S1 T55N R73W	CTL	2009	Fair	INAC	n/a
				2008	Fair	INAC	n/a
5624	454464E 4958825N	S1 T55N R73W	CTL	2009	Fair	INAC	n/a
				2008	Good	ACTI	RETA
5625	457510E 4962280N	S29 T56N R72W	BOX	2009	Remnants	INAC	n/a
				2008	Poor	INAC	n/a
				2007	Fair	INAC	n/a
5626	455420E 4960535N	S31 T56N R72W	POL	2009	Fair	INAC	n/a
				2008	Good	INAC	n/a

BLM ID	UTMs	Legal	Substrate	Year	Condition	Status	Species
5627	454295E 4962311N	S24 T56N R73W	BOX	2009	Good	INAC	n/a
				2009	Poor	INAC	n/a
5628	454207E 4961782N	S25 T56N R73W	JUN	2009	Poor	INAC	n/a
				2009	Good	INAC	n/a
				2008	Good	ACTI	GRHO
12257	457519E 4956671N	S08 T55N R72W	POL	2010	Good	INAC	n/a
				2010	Good	INAC	n/a
12258	457402E 4956565N	S08T55N R72W	POL	2010	Good	INAC	n/a
				2009	Good	INAC	n/a
Nest Substrate Codes: GHS- Ground/Hillside CTL- Cottonwood Tree Live CTD- Cottonwood Tree Dead BOX- Box Elder Tree POL- Ponderosa Tree Live JUN- Juniper				Activity Codes: INAC- Inactive ACTI- Active OCCU- Occupied DNLO- Did Not Locate			

3.4. Cultural Resources

Class III cultural resource inventory was performed for the Dean Draw POD prior to on-the-ground project work (BFO project no. 70110013). Arcadis 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*. Seth Lambert, BLM Archaeologist, reviewed the report for technical adequacy and compliance with Bureau of Land Management (BLM) standards, and determined it to be adequate. A previously reviewed and accepted Class III cultural resource inventory (BFO # 70030032) adequately covered the proposed 21 -11 project area. The following resources are located in or near the project area.

Table 3.4 Cultural Resources Inventory Results

Site Number	Site Type	National Register Eligibility
48CA712	Prehistoric Site	Not Eligible
48CA5964	Historic	Not Eligible
48CA7051	Prehistoric	Not Eligible

3.5. Recreation

The 1985 Buffalo Resource Management Plan states that “The Powder River Breaks are nationally known for big game hunting. Hunters come to the area from throughout the continental United States”. Public lands in much of the Powder River Breaks region of the Buffalo Field Office consist of isolated tracts of land administered by the BLM that are too small to provide a quality recreation experience. Dispersed recreation activities within the Buffalo Field Office include hunting, hiking, driving for pleasure, OHV

use, sightseeing, camping, and wildlife viewing. Recreational use is expected to increase by approximately 5 percent every 5 years for most recreational activities (PRB FEIS).

One portion of the project area is cooperatively managed, by the BLM, Wyoming Game and Fish Department (WGFD), and Jayne Harris (adjacent landowner) as a walk-in hunting area. In 2004, a walk-in area agreement was signed keeping the walk-in area status active for the next 5 years. The agreement is expected to be renewed in 2010. Under the agreement, hunters may access the BLM and private lands inside the walk-in area without the use of motorized vehicles. Elk Creek Road is the only route open for motorized travel within the project area.

The project area is in one of the larger areas of accessible public land in northern Campbell County, which is attractive to recreation users and provides for more adequate dispersed recreation and a quality recreational experience. It is encompassed within Antelope hunt area 17 and Deer hunt area 18.

3.6. Transportation

Elk Creek Road (County Road 33) bisects Section 32 in T56N R 72W. Access to Section 5 of T55N R 72 W is through private roads stemming from Collins Road (County Road 23). There is no other legal vehicle access within the project area. Several two-track roads are present within the Trend Exploration project area; the roads are utilized for livestock management and most are not accessible for public use.

The RMP states that “Using motorized vehicles requires no fee and no permit, but their use is restricted depending on whether the area has been designated closed, limited or open” (BLM, 1985). The Buffalo RMP designates travel in this area as a “Limited Area B: Use is limited to designated roads and vehicle routes within these areas. Until signs are posted, vehicle travel is limited to existing roads and vehicle routes” (BLM, 1985). The BLM recognizes a road as existing from the roads and trails inventoried from the 1985 RMP. Recent RMP maintenance now recognizes roads found on the 1989-1991 Surface Ownership Maps as existing roads. The roads in BLM lands within the project area have been signed and enforced to reflect the RMP decisions, keeping motorized traffic solely on Elk Creek Road and Collins Road.

3.7. Visual Resources

The entire project area is classified as Visual Resource Management Class IV under the 2001 Update of the Resource Management Plan. The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention.

3.8. 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 [NO_x]) from existing natural gas fired compressor engines used in production of natural gas and CBNG; and, gasoline and diesel vehicle tailpipe emissions of combustion pollutants;
- 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;
- NO_x, particulate matter, and other emissions from diesel trains and,
- SO₂ and NO_x 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.

4. ENVIRONMENTAL CONSEQUENCES

4.1. Alternative B

4.1.1. Vegetation & Soils

4.1.1.1. Soils

4.1.1.1.1. Direct and Indirect Effects

The impacts listed below, singly or in combination, would increase the potential for valuable soil loss due to increased water and wind erosion, invasive plant establishment, and increased sedimentation and salt loads to the watershed system.

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

- Mixing of horizons – occurs 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 revegetation. 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.
- Soil erosion would also affect soil health and productivity. Erosion rates are site specific and are dependent on soil, climate, topography and cover.
- Soil compaction – the collapse of soil pores results in decreased infiltration and increased erosion potential. Factors affecting compaction include soil texture, moisture, organic matter, clay content and type, pressure exerted, and the number of passes by vehicle traffic or machinery.
- Alteration of surface run off characteristics.
- 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 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.

Direct effects (removal and/or compaction) to vegetation would occur from ground disturbance caused by drilling rig equipment and construction of a well pads, tank batteries, associated pipelines and roads. Short term effects would occur where vegetated areas are disturbed but later reclaimed within 1 to 3 years of the initial disturbance. Long-term effects would occur where well pads, compressor stations, roads,

water-handling facilities or other semi-permanent facilities may result in loss of vegetation and affect reclamation success for the life of the project.

4.1.1.1.2. Cumulative Effects

The designation of the duration of disturbance is defined in the PRB FEIS (pg 4-1 and 4-15). Most soil disturbances would be short term impacts with expedient interim reclamation and site stabilization, as committed to by the operator in their POD Surface Use Plan and as required by the BLM in COAs.

Geomorphic effects of roads and other surface disturbance range from chronic and long-term contributions of sediment into waters of the state to catastrophic effects associated with mass failures of road fill material during large storms. Roads can affect geomorphic processes primarily by: accelerating erosion from the road surface and prism itself through mass failures and surface erosion processes; directly affecting stream channel structure and geometry; altering surface flow paths, leading to diversion or extension of channels onto previously unchannelized portions of the landscape; and causing interactions among water, sediment, and debris at road-stream crossings.

These impacts, singly or in combination, could increase the potential for valuable soil loss due to increased water and wind erosion, invasive/noxious/poisonous plant spread, invasion and establishment, and increased sedimentation and salt loads to the watershed system.

4.1.1.1.3. Mitigation Measures

The proponent planned their project to maximize the fluid mineral drainage while avoiding areas with soil limitation where possible. The proponent also designed the infrastructure such that no constructed well pads will be required and no engineered roads will be required. BLM made further recommendations during the onsite to avoid areas with low reclamation potential and poor site suitability. Disturbances approved within these areas require the programmatic/standard COA's be complimented with a site specific performance based reclamation related COA. The following mitigation will be applied through a COA:

- Impacts to soils and vegetation from surface disturbance will be reduced by following the BLM applied mitigation. The wells have been cited so that no constructed pads will be required. Access roads have been located such that no engineered roads are required. The operator has committed to minimizing disturbance widths for roads and pipeline corridors; and maintaining 20 feet vegetative buffers near drainages.
- The operator will follow the guidance provided in the Wyoming Policy on Reclamation (IM WY-90-231). The Wyoming Reclamation Policy applies to all surface disturbing activities. Authorizations for surface disturbing actions are based upon the assumptions that an area can and ultimately will be successfully reclaimed. BLM reclamation goals emphasize eventual ecosystem reconstruction, which means returning the land to a condition approximate to an approved "Reference Site" or NRCS Ecological Site Transition State. Final reclamation measures are used to achieve this goal. BLM reclamation goals also include the short-term goal of quickly stabilizing disturbed areas to protect both disturbed and adjacent undisturbed areas from unnecessary degradation. Interim reclamation measures are used to achieve this short-term goal.
- Compaction would be remediated by plowing or ripping.

4.1.1.1.4. Residual Effects

Due to the presence of highly erosive soils and the topography of the project area erosion will occur. Rilling and gullyng of cut and fill slopes on, access/utility corridors, will take place. Impacts from livestock to stabilized cut and fill slopes will limit soils becoming stable and getting vegetation establish.

Residual Effects were also identified in the PRB FEIS at page 4-408 such as the loss of vegetative cover despite expedient reclamation, for several years until reclamation is successfully established. Refer to Table 2.2 for a summary of disturbance.

The designation of the duration of disturbance is defined in the PRB FEIS (pg 4-1 and 4-151). “For this EIS, short-term effects are defined as occurring during the construction and drilling/completion phases. Long-term effects are caused by construction and operations that would remain longer”.

4.1.1.1.5. Invasive Species

4.1.1.1.5.1. Direct and Indirect Effects

The use of existing facilities along with the surface disturbance associated with construction of proposed access roads, pipelines, water management infrastructure, produced water discharge points and related facilities would present opportunities for weed invasion and spread.

4.1.1.1.5.2. Cumulative Effects

Drainages in the project area that are receiving produced CBNG water would likely continue to modify existing soil moisture and soil chemistry regimes in the areas of water release and storage. The impacts related to the existing oil and gas field would create a favorable environment for the establishment and spread of noxious weeds/invasive plants such as salt cedar, Canada thistle and perennial pepperweed.

4.1.1.1.5.3. Mitigation Measures

The operator has committed to the control of noxious weeds and species of concern using the following measures identified in their Integrated Pest Management Plan (IPMP):

1. Control Methods include physical, biological, and chemical methods:
Physical methods include mowing during the first season of establishment, prior to seed formation, and hand pulling of weeds (for small or new infestations). Biological methods include the use of domestic animals, or approved biological agents. Chemical methods include the use of herbicides, done in accordance with the existing Surface Use Agreement with the private surface owner.
2. Preventive practices:
Certified weed-free seed mixtures will be used for re-seeding, and vehicles and equipment will be washed before leaving areas of known noxious weed infestations.
3. Education:
The company will provide periodic weed education and awareness programs for its employees and contractors through the county weed districts and federal agencies. Field employees and contractors will be notified of known noxious weeds or weeds of concern in the project area.

4.1.1.1.5.4. Residual Effects

Control efforts by the operator are limited to the surface disturbance associated the implementation of the project. Cheat grass and other invasive species that are present within non-physically disturbed areas of the project area are anticipated to continue to spread unless control efforts are expanded. Cheatgrass and to a lesser extent, Japanese brome (*B. japonicus*) are found in such high densities and numerous locations throughout NE Wyoming that a control program is not considered feasible at this time; these annual bromes would continue to be found within the project area.

4.1.1.2. Wildlife Threatened, Endangered, Proposed and Candidate Species

4.1.1.2.1. Threatened and Endangered Species

Potential project effects on Threatened and Endangered Species were analyzed and a summary is provided in Table 4.1.

Table 4.1 Summary of the Threatened and Endangered Species Habitat and Project Effects Within the Trend POD project area.

Common Name (scientific name)	Habitat	Presence	Project Effects	Rationale
<i>Endangered</i>				
Black-footed ferret (<i>Mustela nigripes</i>)	Black-tailed prairie dog colonies or complexes > 1,000 acres.	NP	NE	No suitable habitat present.
Blowout penstemon (<i>Penstemon haydenii</i>)	Sparsely vegetated, shifting sand dunes	NP	NE	No suitable habitat present.
<i>Threatened</i>				
Ute ladies'-tresses orchid (<i>Spiranthes diluvialis</i>)	Riparian areas with permanent water	NP	NLJ	No suitable habitat present.
<i>Proposed</i>				
Mountain plover (<i>Charadrius montanus</i>)	Short-grass prairie with slopes < 5%	NP	LAA	No suitable habitat present
<i>Candidate</i>				
Greater sage-grouse (<i>Centrocercus urophasianus</i>)	Basin-prairie shrub, mountain-foothill shrub	K	MIH	Sagebrush cover will be affected. Human presence and traffic will increase. Overhead power will be present.
<p>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.</p> <p>Project Effects LAA - Likely to adversely affect NE - No Effect NLAA - May Affect, not likely to adversely affect individuals or habitat. NLJ - Not likely to jeopardize species existence.</p>				

4.1.1.2.1.1. Black-Footed Ferret

4.1.1.2.1.1.1. Direct and Indirect Effects

There are two black-tailed prairie dog colonies within or adjacent to the Trend project area totaling approximately 11.12 acres which are separated by 0.65 miles. Due to the limited availability of habitat the black-footed ferret is not present within the project area and the implementation of the proposed development will have “no effect” on the black-footed ferret.

4.1.1.2.1.1.2. Cumulative Effects

The PRB FEIS discusses impacts to black-footed ferret are on pp. 4-251.

4.1.1.2.1.1.3. Mitigation Measures

No further mitigation measure applied.

4.1.1.2.1.1.4. Residual Effects

None identified.

4.1.1.2.1.2. Blowout penstemon

4.1.1.2.1.2.1. Direct and Indirect Effects

No sand dunes, blowouts, or large sand deposits were identified within the Trend project area. Also none of the vegetation associated with known blowout penstemon populations was identified within the project area. The project will have “no effect” on blowout penstemon.

4.1.1.2.1.2.2. Cumulative Effects

None identified.

4.1.1.2.1.2.3. Mitigation Measures

No further mitigation measure applied.

4.1.1.2.1.2.4. Residual Effects

None identified.

4.1.1.2.1.3. Ute Ladies’-Tresses Orchid

4.1.1.2.1.3.1. Direct and Indirect Effects

Suitable wetland and riparian habitat is not present near the Trend project area. The project will have “no effect” on Ute Ladies’-Tresses orchid.

4.1.1.2.1.3.2. Cumulative Effects

The PRB FEIS discusses impacts to Ute Ladies’-Tresses orchid are on pp. 4-253.

4.1.1.2.1.3.3. Mitigation Measures

No further mitigation measure applied.

4.1.1.2.1.3.4. Residual Effects

None identified.

4.1.1.2.2. Proposed Species

4.1.1.2.2.1. Mountain Plover

4.1.1.2.2.1.1. Direct and Indirect Effects

Suitable habitat is not present near the Trend project area, and the potential habitat provided by black-tailed prairie dog colonies are of insufficient size. The project is not likely to jeopardize the continued existence of mountain plover.

4.1.1.2.2.1.2. Cumulative Effects

The PRB FEIS discusses impacts to mountain plover are on pp. 4-254.

4.1.1.2.2.1.3. Mitigation Measures

No further mitigation measure applied.

4.1.1.2.2.1.4. Residual Effects

None identified.

4.1.1.2.3. Candidate Species

4.1.1.2.3.1. Greater Sage-grouse

4.1.1.2.3.1.1. Direct and Indirect Effects

Impacts to sage-grouse associated with energy development are discussed in detail in the *12-Month Findings for Petitions to List the Greater Sage-Grouse (Centrocercus urophasianus) as Threatened or*

Endangered (USFWS 2010). Impacts to sage-grouse are generally a result of loss and fragmentation of sagebrush habitats associated with roads and infrastructure. Research indicates that sage-grouse hens also avoid nesting in developed areas. Direct and indirect impacts to sage-grouse are discussed in more detail in the PRB FEIS on pg. 4-257 to 4-273.

Implementation of the project will adversely impact nesting habitat, both through direct loss and avoidance of the area by sage-grouse. 36.7 acres of habitat will be removed from the construction of wells and associated infrastructure. Realization of the proposed project will also contribute to habitat fragmentation and effectiveness. Disruptive activities related to maintenance and construction may inhibit sage-grouse from using remaining habitat. The Trend project does not occur in key sage-grouse habitat.

4.1.1.2.3.1.2. Cumulative Effects

Recent research suggests that the cumulative and synergistic effects of current and foreseeable CBNG development within the vicinity of the project area are likely to impact the local sage-grouse population, cause declines in lek attendance, and may result in local extirpation. The cumulative impact assessment area for this project encompasses the project area and the area that is encompassed by a four mile radius around the four sage-grouse leks that occur within four miles of the project boundary, resulting in an area of 71.09 mi². Analysis of impacts up to four miles was recommended by the State Wildlife Agencies' Ad Hoc Committee for Consideration of Oil and Gas Development Effects to Nesting Habitat (2008).

The sage-grouse population within northeast Wyoming has been exhibiting a steady long term downward trend, as measured by lek attendance (WGFD 2008). Figure 4.1 illustrates a ten-year cycle of periodic highs and lows. Each subsequent population peak is lower than the previous peak. Research suggests that these declines may be a result, in part, of CBNG development, as discussed in detail in USFWS (2010).

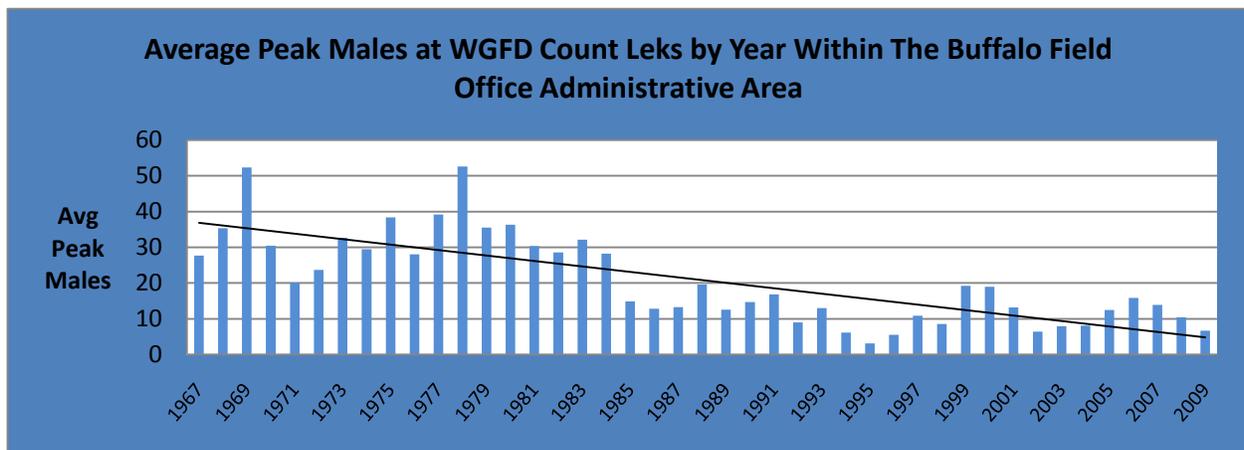


Figure 4.1.

In its *Recommendations for Development of Oil and Gas Resources within Important Wildlife Habitats* (2009), WGFD categorized impacts to sage-grouse by number of well pad locations per square mile within two miles of a lek and within identified nesting/brood-rearing habitats greater than two miles from a lek. Based on the two mile analysis for determining category of impact, the proposed wells within the Trend project area will not change the impact categories for the two leks within two miles of the project area, reference table 3.1 for current impact determinations.

Based on the summary of research describing the impacts of energy development on sage-grouse, efforts to reduce habitat loss and fragmentation are likely to be the most effective in ensuring long-term lek

persistence. Design features specifically included in the proposed action under Alternative B to minimize impacts to sage-grouse include:

- Pipelines and utilities were corridorred with access when possible.
- Proposed tank battery was relocated to avoid habitat fragmentation.
- Utilized existing access roads when possible to avoid unnecessary habitat loss.

The PRB FEIS (BLM 2003) states that “the synergistic effect of several impacts would likely result in a downward trend for the sage-grouse population, and may contribute to the array of cumulative effects that may lead to its federal listing. Local populations may be extirpated in areas of concentrated development, but viability across the Project Area (Powder River Basin) or the entire range of the species is not likely to be compromised (pg. 4-270).” Based on the impacts described in the Powder River Basin Oil and Gas Project FEIS and the findings of more recent research, the proposed action may contribute to a decline in male attendance at the four leks that occur within four miles of the project area, and, potentially, extirpation of the local grouse population. It is the policy of the Wyoming BLM to manage greater sage-grouse habitats in support of population objectives set by the Wyoming Game and Fish Department (WGFD), it is the policy of the Wyoming BLM to manage the greater sage-grouse seasonal habitats and maintain habitat connectivity to support population objectives set forth by the Wyoming Game and Fish.

4.1.1.2.3.1.3. Mitigation Measures

To reduce impacts to breeding sage-grouse (as described in the PRB EIS (pp. 4-223 and 4-224), surface disturbing activities will be restricted during the nesting and early brood rearing season near leks and in high quality nesting habitat.

Any overhead power constructed in sage-grouse habitats needs to be equipped with raptor perch deterrents.

4.1.1.2.3.1.4. Residual Effects

The installation of perch deterrents to overhead power will reduce potential predation to sage-grouse but the existence of overhead power may deter sage-grouse from using habitat in the vicinity of the power line.

4.1.1.2.3.2. Sagebrush obligates

4.1.1.2.3.2.1. Direct and Indirect Effects

The species directly affected by the Trend project include Brewer’s sparrow and the sage thrasher. The PRB FEIS discusses impacts to sensitive species on pp. 4-257 to 4-273. Expected impacts to the sagebrush obligates identified within the project area are discussed in the Migratory Bird section to follow and impacts to sagebrush communities are described in the sage-grouse section.

4.1.1.2.3.2.2. Cumulative Effects

The PRB FEIS discusses impacts to sensitive species on pp. 4-257 to 4-273.

4.1.1.2.3.2.3. Mitigation Measures

No further mitigation measure applied.

4.1.1.2.3.2.4. Residual Effects

None identified.

4.1.1.3. Migratory Birds

4.1.1.3.1. Direct and Indirect Effects

Direct and indirect effects to migratory birds are discussed in the PRB FEIS (pp. 4-231 to 4-235).

Disturbance of habitat within the project area is likely to impact migratory birds. Native habitats will be lost directly with the construction of wells, roads, and pipelines. Reclamation and other activities that occur in the spring may be detrimental to migratory bird survival. Prompt re-vegetation of short-term disturbance areas should reduce habitat loss impacts. Activities will likely displace migratory birds farther than the immediate area of physical disturbance. Drilling and construction noise can be troublesome for songbirds by interfering with the males' ability to attract mates and defend territory, and the ability to recognize calls from conspecifics (BLM 2003).

Habitat fragmentation will result in more than just a quantitative loss in the total area of habitat available; the remaining habitat area will also be 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 through displacement were much greater than the direct physical habitat losses.

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 leads 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.

Migratory bird species within the Powder River Basin nest in the spring and early summer and are vulnerable to the same effects 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, nesting migratory birds are also protected. Where these timing limitations are not applied and migratory bird species are nesting, migratory birds remain vulnerable.

4.1.1.3.2. Cumulative Effects

The cumulative effects associated with Alternative B are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, refer to the PRB FEIS, pg. 4-235. No additional mitigation measures are required.

4.1.1.3.3. Mitigation Measures

Where sage-grouse or raptor nesting timing limitations are applied, in this case the northern half of the POD for sage-grouse, nesting migratory birds will also receive protection.

A Condition of Approval requiring all stock tanks to be equipped and maintained with effective wildlife escape devices will reduce potential bird mortalities due to drowning.

4.1.1.3.4. Residual Effects

Those species and individuals that are still nesting when the sage-grouse timing limitations are over (June 30) may have nests destroyed, or be disturbed, by construction activities. Sage-grouse timing limitations will apply to the entire project. Protections around active raptor nests (Feb 1- July 31) extend past most

migratory bird nesting seasons. Only a percentage of known nest are active any given year, so the protections for migratory birds from June 30-July 31 will depend on how many raptor nests are active.

4.1.1.4. Sensitive Species

BLM will take necessary actions to meet the policies set forth in sensitive species policy (BLM Manual 6840). BLM Manual 6840.22A states that “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 ESA 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.”

The PRB FEIS discusses impacts to sensitive species on pp. 4-257 to 4-265

4.1.1.4.1. Bald Eagle

4.1.1.4.1.1. Direct and Indirect Effects

Impacts to bald eagles are discussed in the PRB FEIS on pg. 4-251 to 4-253. A more recent study completed in 2004 suggests that two-tracks and improved project roads pose minimal collision risk to bald eagles. In one year of monitoring road-side carcasses the BLM BFO reported 439 carcasses, 226 along Interstates (51%), 193 along paved highways (44%), 19 along gravel county roads (4%), and 1 along an improved CBNG road (<1%) (Bills 2004). No road-killed eagles were reported; bald and golden eagles were observed feeding on 16 of the reported road-side carcasses (<4%). The risk of big-game vehicle-related mortality along CBNG project roads is so insignificant or discountable that when combined with the lack of bald eagle mortalities associated with highway foraging leads to the conclusion that CBNG project roads do not affect bald eagles.

Activities associated with the Trend project may impact bald eagles by disturbing birds foraging in the area. The project will not impact any identified nests or winter roost concentration areas.

4.1.1.4.1.2. Cumulative Effects

The cumulative effects for bald eagles associated with Alternative B are described in the PRB FEIS (pp. 4-251 to 4-253).

4.1.1.4.1.3. Mitigation Measures

No further mitigation measure applied.

4.1.1.4.1.4. Residual Effects

There will be increased traffic in the general area resulting from this project which may increase disturbance to bald eagles. The overhead power associated with this project will increase risk of eagles being electrocuted in spite of efforts to design power lines to be “raptor safe”.

4.1.1.4.2. Ferruginous Hawk

4.1.1.4.2.1. Direct and Indirect Effects

The PRB FEIS discussed impacts to sensitive species on pp. 4-257 to 4-273. Impacts expected from project actions are described in the Raptor section below.

4.1.1.4.2.2. Cumulative Effects

The PRB FEIS discusses impacts to sensitive species on pp. 4-257 to 4-273.

4.1.1.4.2.3. Mitigation Measures

No further mitigation measure applied.

4.1.1.4.2.4. Residual Effects

None identified.

4.1.1.4.3. Loggerhead Shrike

4.1.1.4.3.1. Direct and Indirect Effects

The PRB FEIS discusses impacts to sensitive species on pp. 4-257 to 4-273. Expected project impacts to loggerhead shrikes are discussed in the Migratory Bird section above.

4.1.1.4.3.2. Cumulative Effects

The PRB FEIS discusses impacts to sensitive species on pp. 4-257 to 4-273.

4.1.1.4.3.3. Mitigation Measures

No further mitigation measure applied.

4.1.1.4.3.4. Residual Effects

None identified.

4.1.1.4.4. Western Burrowing Owl

4.1.1.4.4.1. Direct and Indirect Effects

The PRB FEIS discusses impacts to sensitive species on pp. 4-257 to 4-273. Use of roads and pipeline corridors may increase owl vulnerability to vehicle collision.

4.1.1.4.4.2. Cumulative Effects

The PRB FEIS discusses impacts to sensitive species on pp. 4-257 to 4-273.

4.1.1.4.4.3. Mitigation Measures

No further mitigation measure applied.

4.1.1.4.4.4. Residual Effects

None identified.

4.1.1.5. Big Game

4.1.1.5.1. Direct and Indirect Effects

Under Alternative B yearlong range for mule deer and for pronghorn would be directly impacted by the construction of 11 wells 2.23 miles of new roads, approximately 3.86 miles of new pipelines outside of roads, 3 tank batteries and increased vehicle traffic on established roads.

In addition to the direct habitat loss and potential vehicle collisions big game would likely be displaced from the project area during drilling and construction (Hiatt and Baker 1981). Further information regarding direct and indirect effects to big game is provided in the PRB FEIS on pp. 4-181 to 4-215.

The amount of anticipated big game habitat disturbance warrants effective reclamation efforts designed to facilitate re-establishment of diverse plant community assemblages including sagebrush, grass, and food-forbs.

4.1.1.5.2. Cumulative Effects

The cumulative effects associated with Alternative B are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, refer to the PRB FEIS, pg. 4-181 to 4-215.

4.1.1.5.3. Mitigation Measures

No further mitigation measures applied.

4.1.1.5.4. Residual Impacts

While big game animals may return to the project area following construction, continued human-caused disturbance associated with operation and maintenance may result in reduced local populations because big game may fail to habituate to new disturbances (Lustig 2003), Habitat effectiveness for big game is anticipated to be reduced in the project area.

4.1.1.6. Raptors

4.1.1.6.1. Direct and Indirect Effects

Human activities in close proximity to active raptor nests may interfere with nest productivity. Romin and Muck (1999) indicate that activities within 0.5 miles of a nest are prone to cause adverse impacts to nesting raptors. If mineral activities occur during nesting, they could be sufficient to cause adult birds to remain away from the nest and their chicks for the duration of the activities. This absence can lead to overheating or chilling of eggs or chicks and can result in egg or chick mortality. Prolonged disturbance can also lead to the abandonment of the nest by the adults. Routine human activities near these nests can also draw increased predator activity to the area and resulting in increased nest predation.

To reduce the risk of decreased productivity or nest failure, the PRB FEIS recommends a 0.5 mile radius timing limitation during the breeding season around active raptor nests and recommends all infrastructure requiring human visitation be located in such a way as to provide adequate biologic buffer for nesting raptors. A biologic buffer is a combination of distance and visual screening that provides nesting raptors with security such that they will not be flushed by routine activities.

Table 4.2 Proposed and existing infrastructure within 0.5 mile of documented raptor nests within the Trend project area.

BLM ID	Infrastructure
875	<ul style="list-style-type: none"> Overhead power
4211	<ul style="list-style-type: none"> Wells: FED 34-31, FED 43-31, FED 14-32, Fed 13-32, FED 41-6. Tank battery and access/utility corridor.
4213	<ul style="list-style-type: none"> Wells: FED 42-31, FED 43-31, and access/utility corridor.
5415	<ul style="list-style-type: none"> Wells: FED 42-31, FED 43-31, and access/utility corridor.
5623	<ul style="list-style-type: none"> Overhead power
5624	<ul style="list-style-type: none"> Overhead power
5626	<ul style="list-style-type: none"> Wells: FED 42-31, FED 43-31, and access/utility corridor.
12257	<ul style="list-style-type: none"> Wells: FED 34-8, FED 44-8A, FED 41-17. Tank batteries, overhead power and access/utility corridor.
12258	<ul style="list-style-type: none"> Wells: FED 34-8, FED 44-8A, FED 41-17. Tank batteries, overhead power and access/utility corridor.

Additional direct and indirect impacts to raptors, from oil and gas development, are analyzed in the PRB FEIS (pp. 4-216 to 4-221).

4.1.1.6.2. Cumulative Effects

The cumulative effects associated with Alternatives C are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, refer to the PRB FEIS, pg. 4-221.

4.1.1.6.3. Mitigation Measures

To reduce the risk of decreased productivity or nest failure (PRB FEIS, p. 4-218), the PRB FEIS allows a 0.5 mile radius timing limitation during the breeding season around active raptor nests. In addition, well metering, maintenance, and other site visits within 0.5 mile of raptor nests should also be minimized during the breeding season around active nests. In order to further understand the degree of potential population effects to raptor species (PRB FEIS, p. 4-219 to 4-220), annual surveys for new raptor nests and nest occupancy checks shall be completed.

4.1.1.6.4. Residual Impacts

In spite of design by Trend and BLM during project planning and mitigation measures applied as COAs by BLM, there will be an increase in traffic, construction activity and human presence in the area throughout the life of the project which will the quality of the area for nesting raptors. Even with the application of “raptor safe” design, electrocutions on power lines associated with the project may occur. Timing limitations during the construction phase of the project will protect nests from disturbance, but there will be disturbance during well operation that may discourage raptors from using and/or initiating new and existing nest locations.

4.1.2. Cultural Resources

Non eligible site(s) 48CA5964 will be impacted by the proposed project. 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 10/27/10 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).

4.1.2.1. Cumulative Effects

Construction and development of oil and gas resources impacts cultural resources through ground disturbance, unauthorized collection, and visual intrusion of the setting of historic properties. This results in fewer archaeological resources available for study of past human life-ways, changes in human behavior through time, and interpreting the past to the public. Additionally, these impacts may compromise the aspects of integrity that make a historic property eligible for the National Register of Historic Places. Recording and archiving basic information about archaeological sites and the potential for subsurface cultural materials in the proposed project area serve to partially mitigate potential cumulative effects to cultural resources.

Fee actions constructed in support of federal actions can result in impacts to historic properties. Construction of large plans of oil and gas development on split estate often include associated infrastructure that is not permitted through BLM. Project applicants may connect wells draining fee minerals, or previously constructed pipelines on fee surface with a federal plan of development. BLM has no authority over such development which can impact historic properties. BLM has the authority to modify or deny approval of federal undertakings on private surface, but that authority is limited to the extent of the federal approval. Historic properties on private surface belong to the surface owner and they are not obligated to preserve or protect them. The BLM may go to great lengths to protect a site on private surface from a federal undertaking, but the same site can be legally impacted by the landowner at any time. The cumulative effect of numerous federal approvals can result in impacts to historic properties. Archeological inventories reveal the location of sites and although the BLM goes to great

lengths to protect site location data, information can potentially get into the wrong hands. BLM authorizations that result in new access can inadvertently lead to impacts to sites from increased visitation by the public.

4.1.2.2. Mitigation Measures

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).

4.1.2.3. Residual Effects

During the construction phase, there will be numerous crews working across the project area using heavy construction equipment without the presence of archaeological monitors. Due to the extent of work and the surface disturbance caused by large vehicles, it is possible that unidentified cultural resources can be damaged by construction activities. The increased human presence associated with the construction phase can also lead to unauthorized collection of artifacts or vandalism of historic properties.

4.1.3. Recreation

4.1.3.1. Direct and Indirect Effects

A portion of the project area has been cooperatively managed as a mule deer and pronghorn walk-in hunting area for nearly a decade. The area is popular with the hunting public because of motorized use restrictions, the semi-primitive experience, and because it is one of the few large land blocks available for unguided hunters in northern Campbell County within the Powder River Basin. CBNG development is changing the rural undeveloped nature of the Basin to a rural industrial setting, decreasing the satisfaction levels of many hunters and other recreationists. Documents state that one permitted outfitter with the BLM Buffalo Field Office returned his 2005 permit due to client dissatisfaction with hunting in natural gas fields. Other outfitters have also made similar comments and discussed returning their permits.

Drilling and construction activities are the most disruptive to big game and hunters. Construction noise and activity displaces big game and competes with the solitude and primitive experience many hunters seek. Development would result in direct habitat loss and habitat fragmentation for big game and potentially impact the hunting public. Mule deer and antelope are expected to return to the project area following drilling and construction, however in lower numbers than before; metering and maintenance activities will likely continue to displace big game, particularly mule deer. The hunting experience is expected to improve following construction, but the solitude and primitive experiences prior to development would not. Ongoing CBNG operations during the hunting season will impact hunting success and satisfaction, loss of the near-wilderness experience, goal interference, and displacing hunting activities. This may result in long term decreased hunting activity in the area.

There are four proposed well locations on BLM surface and 2 proposed wells located on private surface inside the walk-in area. Conflicts between different recreation users and oil and gas activities may increase. With the increased roads and access, illegal off-road vehicle use and trespass are likely to increase. The oil and gas activity may also pose a danger to recreation users due to heavy machinery on the roads. Oil and gas activity, such as metering, maintenance, and other such procedures depending on the use of motorized travel, also conflict with the management under the walk-in area, compromising the walk-in area program.

Conflicts between different recreation users and oil and gas activities may increase. These conflicts may occur between OHV users and non-OHV users, recreationists and oil and gas activity, and trespassing conflicts due to the newly constructed roads allowing for a large increase of new public access into BLM and private lands. The oil and gas activity may increase safety concerns for recreation users due to use of heavy machinery on the roads.

4.1.3.2. Cumulative Effects

Recreational use of the area is likely to decline due to impacts from oil and gas activity.

4.1.3.3. Mitigation Measures

A timing limitation for drilling has been put in place for the big game hunting season.

4.1.3.4. Residual Effects

Although mitigation has been applied it is only applicable to drilling procedures. A producing oil field requires daily maintenance and/or monitoring. The area may see decline in hunter activity.

4.1.4. Transportation

4.1.4.1. Direct and Indirect Effects

Elk Creek Road and Collins Road provides the only legal public access within the Trend Exploration project area. The proposed action includes an additional road to access wells and infrastructure. Several landowners have commented that trespassing has increased with the additional roads constructed for CBNG development.

4.1.4.2. Cumulative Effects

Impacts related to the construction of access roads used to extract oil and gas include an increase in average daily traffic (ADT), increase in risk of traffic accidents from additional project-related vehicles as well as non-project-related vehicles, increased potential access to remote areas, an increased risk of vehicle collisions with livestock and wildlife, and visual intrusion of project-related vehicles and activities.

4.1.4.3. Mitigation Measures

In order to maintain the travel management objectives in the RMP and to reduce conflicts between the public relative to new roads in the project area, the company will sign the junction of a new road and an existing road.

4.1.4.4. Residual Effects

Additional roads may result in increased trespass onto private lands within the project area and non-public roads on BLM managed surface. Vandalism of wells and infrastructure may also increase with the additional roads.

4.1.5. Visual Resources

4.1.5.1. Direct and Indirect Effects

Disturbance associated with the construction of the well locations and associated infrastructure will result in minor visual impacts. There are no significant VRM concerns with the project. The project, as proposed, meets the Class IV objective.

4.1.5.2. Cumulative Effects

The cumulative effects associated with Alternative B are within the analysis parameters and impacts described in the PRB FEIS that addressed the effects for CBNG. For details on expected cumulative impacts, refer to the PRB FEIS, pg. 4-302.

4.1.5.3. Mitigation Measures

The BLM in concurrence with operator moved one well such that the well and associated infrastructure are no longer key visual observation points. Additional mitigation measures include using color to camouflage the installations and blend the structures into the landscape background. The standard environmental color “Covert Green” has been chosen for all above-ground facilities.

4.1.5.4. Residual Effects

None identified.

4.1.6. Air Quality

4.1.6.1. Direct and Indirect Effects

In the project area, air quality impacts would occur during construction (due to surface disturbance by earth-moving equipment, vehicle traffic fugitive dust, well testing, as well as drilling rig and vehicle engine exhaust) and production (including non-CBM well production equipment, booster and pipeline compression engine exhaust). Air quality impacts modeled in the PRB FEIS concluded that projected oil & gas development would not violate any local, state, tribal or federal air quality standards.

4.1.6.2. Cumulative Effects

The cumulative effects associated with Alternatives B are within the analysis parameters and impacts described in the PRB FEIS. For details on expected cumulative impacts, refer to the PRB FEIS, pg. 4-386.

4.1.6.3. Mitigation Measures

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 material, non-saline dust suppressants, and water) could be used as necessary on unpaved roads that present a fugitive dust problem.

4.1.6.4. Residual Effects

Some increase in air pollution would occur as a direct result of development; however these direct impacts are predicted to be below applicable thresholds (PRB FEIS, pg.4-386).

DESCRIPTION OF PROPOSED MITIGATION MEASURES:

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

5. OTHER PERMITS REQUIRED

A number of other permits are required from Wyoming State and other Federal agencies. These permits are identified in Table A-1 in the PRB RMP Amendment (2003) Record of Decision.

6. CONSULTATION/COORDINATION:

Contact	Title	Organization	Present at Onsite?
Claude Harris	Surface owner	Rancher	yes
Brad Holyoake	Company Rep	Trend Oil	yes
Jeff Bryant	Drilling Contractor	Cyclone Oil	yes

7. REFERENCES AND 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.

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

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