
APPENDIX D

**BIOLOGICAL ASSESSMENT FOR THE GOLD MINE DRAW EXCHANGE,
THREATENED AND ENDANGERED SPECIES EVALUATION, BLM SENSITIVE
SPECIES EVALUATION, AND USFS SENSITIVE AND MANAGEMENT INDICATOR
SPECIES EVALUATION**

TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS	D-3
INTRODUCTION	D-5
DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES	D-6
The Proposed Action	D-6
Alternative 1: No Action Alternative	D-14
CONSULTATION TO DATE	D-15
SPECIES HABITAT, OCCURRENCE, AND EFFECTS OF THE PROPOSED PROJECT	
Threatened Species	D-16
Bald Eagle	D-16
Ute ladies'-tresses	D-19
Endangered Species	D-21
Black-footed Ferret	D-21
SUMMARY OF DETERMINATIONS	D-23
REGULATORY REQUIREMENTS AND MITIGATION	D-24
CUMULATIVE IMPACTS	D-25
BLM SENSITIVE SPECIES EVALUATION	D-26
Introduction	D-28
Species Occurrence and Habitat Description	D-28
USDA-FS REGION 2 SENSITIVE AND MANAGEMENT INDICATOR SPECIES	
USDA-FS Region 2 Sensitive Species	D-31
Habitat and Occurrences On and Near the NARM East Burn Area	D-32
Direct and Indirect Effects on USDA-FS Sensitive Species	D-39
Cumulative Effects Regarding USDA-FS Sensitive Species	D-41
USDA-FS Management Indicator Species	D-42
USDA-FS Management Indicator Botany Species	D-44
Analysis of Effects – USDA-FS Sensitive Species	D-47
CREDENTIALS OF SURVEY PERSONNEL	D-48
Thunderbird Wildlife Consulting, Inc.	D-48
REFERENCES	D-49

FIGURES

Figure D-1	Caballo Mine Offered Tract	D-7
Figure D-2	North Antelope Rochelle Mine East Burn Selected Tracts	D-8
Figure D-3	North Antelope Rochelle Mine South Spur Selected Tracts	D-9
Figure D-4	Rawhide Mine Selected Tract	D-10
Figure D-5	Caballo Mine Selected Tracts	D-11

TABLES

Table D-1	Evaluation of Effects on Federal Threatened, Endangered, Proposed, and Candidate Species in the Area of the Selected Tracts.....	D-23
Table D-2	Sensitive Species List – Buffalo Resource Area	D-29
Table D-3	USDA-FS Region 2 Sensitive Species List	D-33
Table D-4	USDA-FS Region 2 Sensitive Species That May Occur in or by Impacted by Leasing the NARM East Burn Tracts	D-38
Table D-5	Summary of and Analysis Rationale for, USFS Sensitive Species Potentially Occurring on TBNG.....	D-45
Table D-6	USFS Sensitive Species Habitat Summary	D-46

ABBREVIATIONS AND ACRONYMS

BLM	Bureau of Land Management
CBNG	coal bed natural gas
CFR	Code of Federal Regulations
COE	US Army Corps of Engineers
EA	environmental assessment
ESA	Endangered Species Act of 1973
FS	Forest Service
FLPMA	Federal Land Policy Management Act of 1976
FWS	Fish and Wildlife Service
LBA	lease by application
MLA	Mineral Leasing Act of 1920
OSM	Office of Surface Mining Reclamation & Enforcement
PRB	Powder River Basin
PRES	Powder River Eagle Studies
SMCRA	Surface Mining Control and Reclamation Act of 1977
T&E	threatened and endangered
TWC	Thunderbird Wildlife Consulting, Inc.
WDEQ	Wyoming Department of Environmental Quality
WDEQ/LQD	Wyoming Department of Environmental Quality/Land Quality Division
WGFD	Wyoming Game and Fish Department

INTRODUCTION

On July 24, 2003, Caballo Coal Company (Caballo) filed an application with the Bureau of Land Management (BLM) for a coal lease exchange affecting an Alluvial Valley Floor (AVF) at the Caballo Mine. Under the exchange, Caballo Coal Company would acquire new federal coal lease(s) in exchange for relinquishing the leases affecting the AVF. The environmental impacts of completing this exchange are evaluated in an environmental assessment (EA) for the Gold Mine Draw Lease Exchange.

The purpose of this biological assessment is to provide information about the potential environmental effects that making the exchange would have on federally endangered, threatened, proposed, and candidate species.

Threatened and endangered (T&E) species are managed under the authority of the Endangered Species Act (ESA) of 1973 (PL 93-205, as amended). The ESA requires federal agencies to ensure that all actions which they authorize, fund, or carry out are not likely to jeopardize the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of their critical habitat.

This biological assessment was prepared to display the possible effects to endangered, threatened, experimental, proposed, or candidate wildlife or vegetative species (terrestrial and aquatic) known to occur or that may occur within the area influenced by the Proposed Action of the BLM. It was prepared in accordance with section 7 of the ESA.

The objectives of this biological assessment are to comply with the requirements of the ESA which states that actions of federal agencies should not jeopardize or adversely modify critical habitat of federally listed species, and to provide a process and standard by which to ensure that threatened, endangered, and proposed species receive full consideration in the decision-making process.

The Wyoming BLM has also prepared a list of sensitive species to focus species management efforts towards maintaining habitats under a multiple use mandate. The authority for this policy and guidance comes from the ESA of 1973, as amended; Title II of the Sikes Act, as amended; the Federal Land Policy and Management Act (FLPMA) of 1976; and Department Manual 235.1.1A.

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

Under the Proposed Action the selected areas would be mined as maintenance leases to extend the life of the North Antelope Rochelle, Rawhide, and Caballo Mines. As a result, under the Proposed Action existing facilities and roads would be used to mine the coal included in the selected tracts. Employment would not increase at any of the operations because of the small volumes of coal being added.

BLM does not authorize mining by issuing a lease for federal coal, but the impacts of mining the coal are considered at the leasing stage because it is a logical consequence of issuing a maintenance lease to an existing coal mine.

Under the Proposed Action, it is assumed that an area larger than the tract would have to be disturbed in order to recover all of the coal in the tract. The disturbances outside the coal removal area would be due to activities like overstripping, matching undisturbed topography, and constructing flood control and sediment control structures. Under the Proposed Action, portions of the selected tracts at each of the mines are within the current permit areas but some lands are outside. Therefore, each mine would have to amend their current WDEQ/LQD permits to incorporate the new lease areas.

The coal mining unsuitability criteria listed in the federal coal management regulations (43 CFR 3461) have been applied to high to moderate coal development potential lands in the Wyoming Powder River Basin (PRB). None of the lands included in the selected tracts under the Proposed Action in this EA have been determined to be unsuitable for mining. Additional discussion follows in the Consultation to Date section.

The Proposed Action

Under the Proposed Action, the Gold Mine Draw tract, as applied for by Powder River Coal Company, would be offered for exchange for four selected tracts located at the North Antelope Rochelle Mine, Rawhide Mine and Caballo Mine. The boundaries of the tracts would be consistent with the tract configurations proposed in the Gold Mine Draw Exchange (Figures E-1 thru E-5). The minerals within the offered lands would become unleased public minerals if the exchange is completed.

The legal description of the offered Gold Mine Draw exchange tract coal lease lands by Powder River under the Proposed Action is as follows:

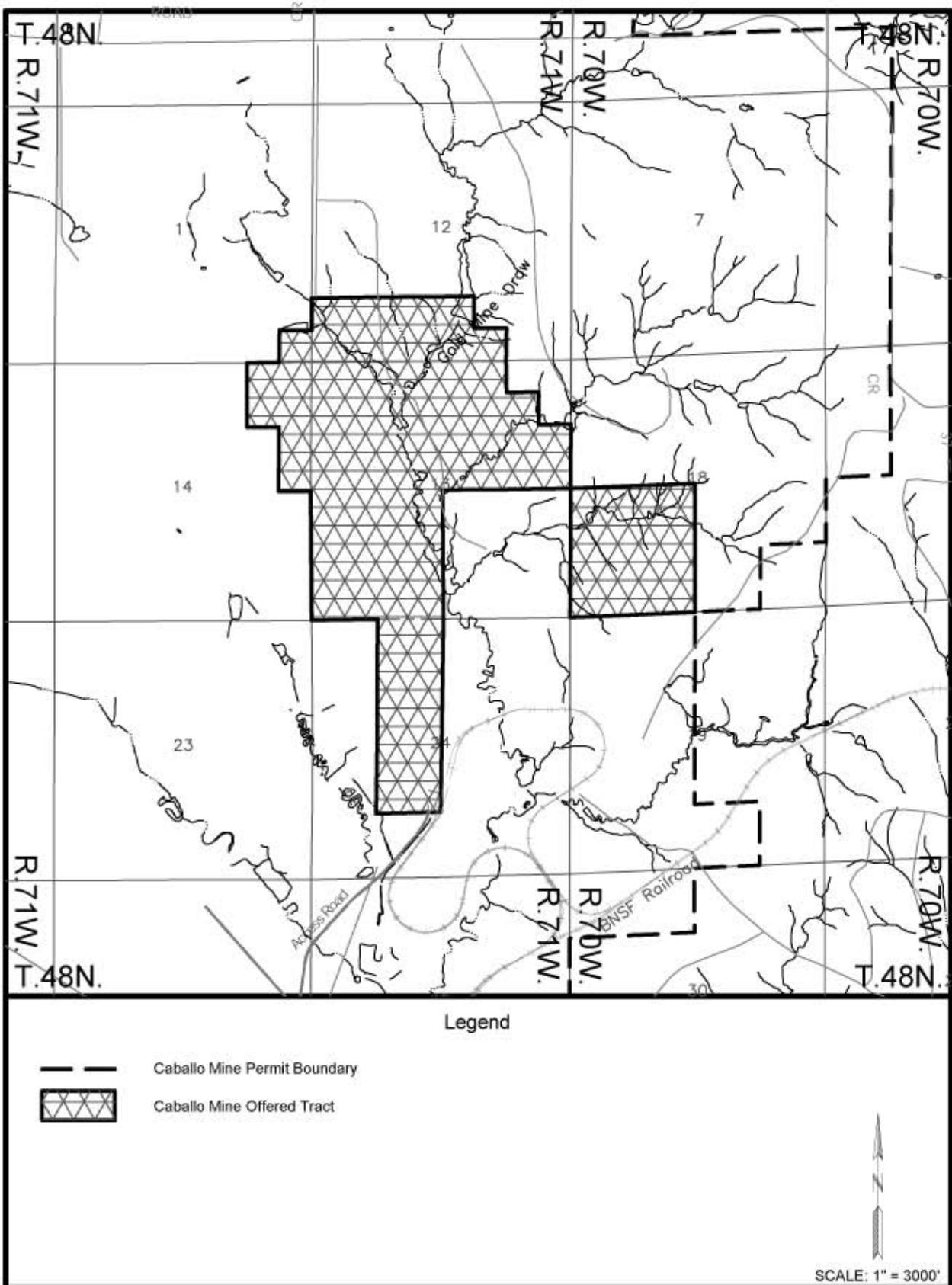


Figure D-1 Caballo Mine Offered Tract

ALTERNATE

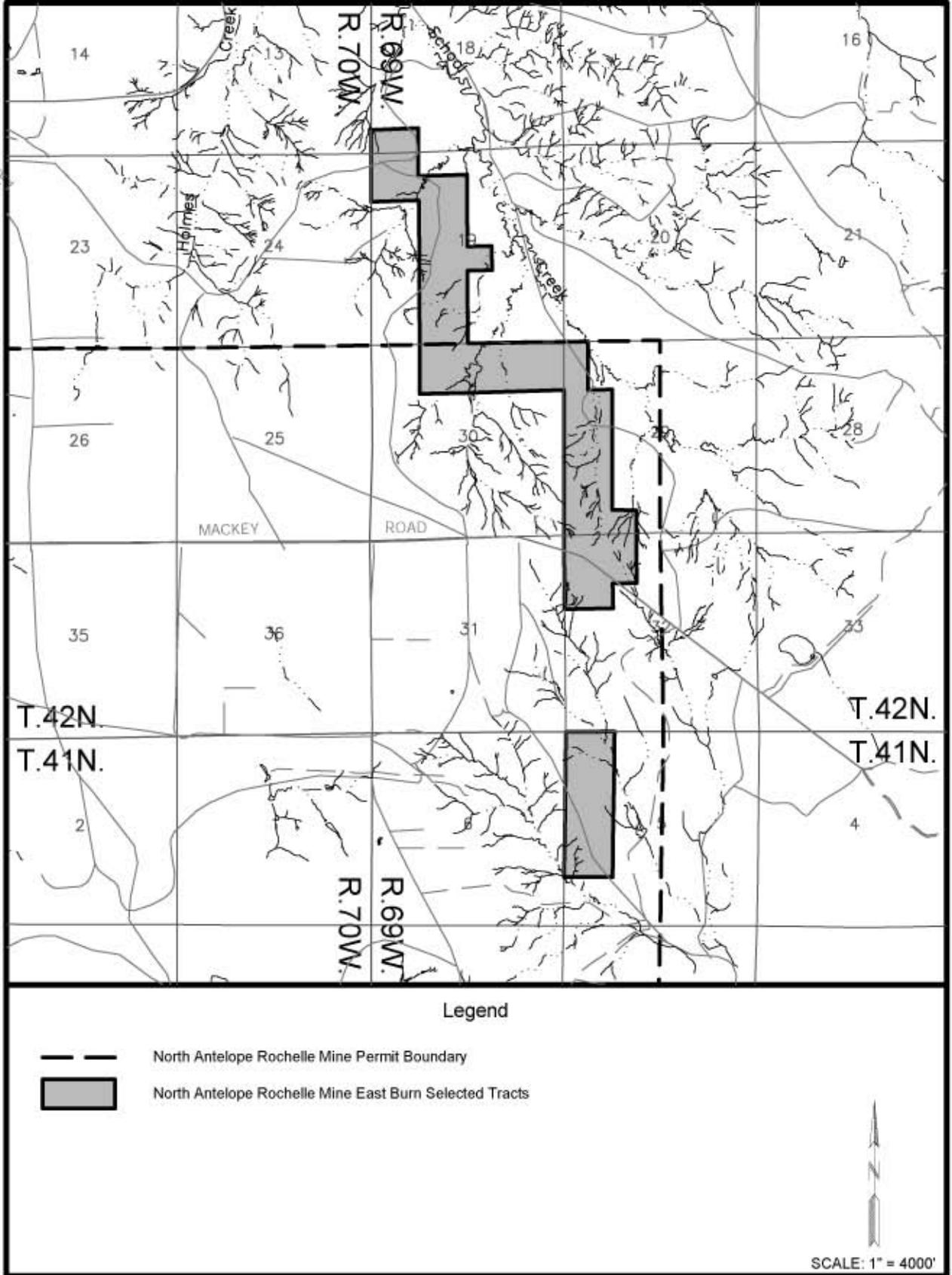


Figure D-2 North Antelope Rochelle Mine East Burn Selected Tracts

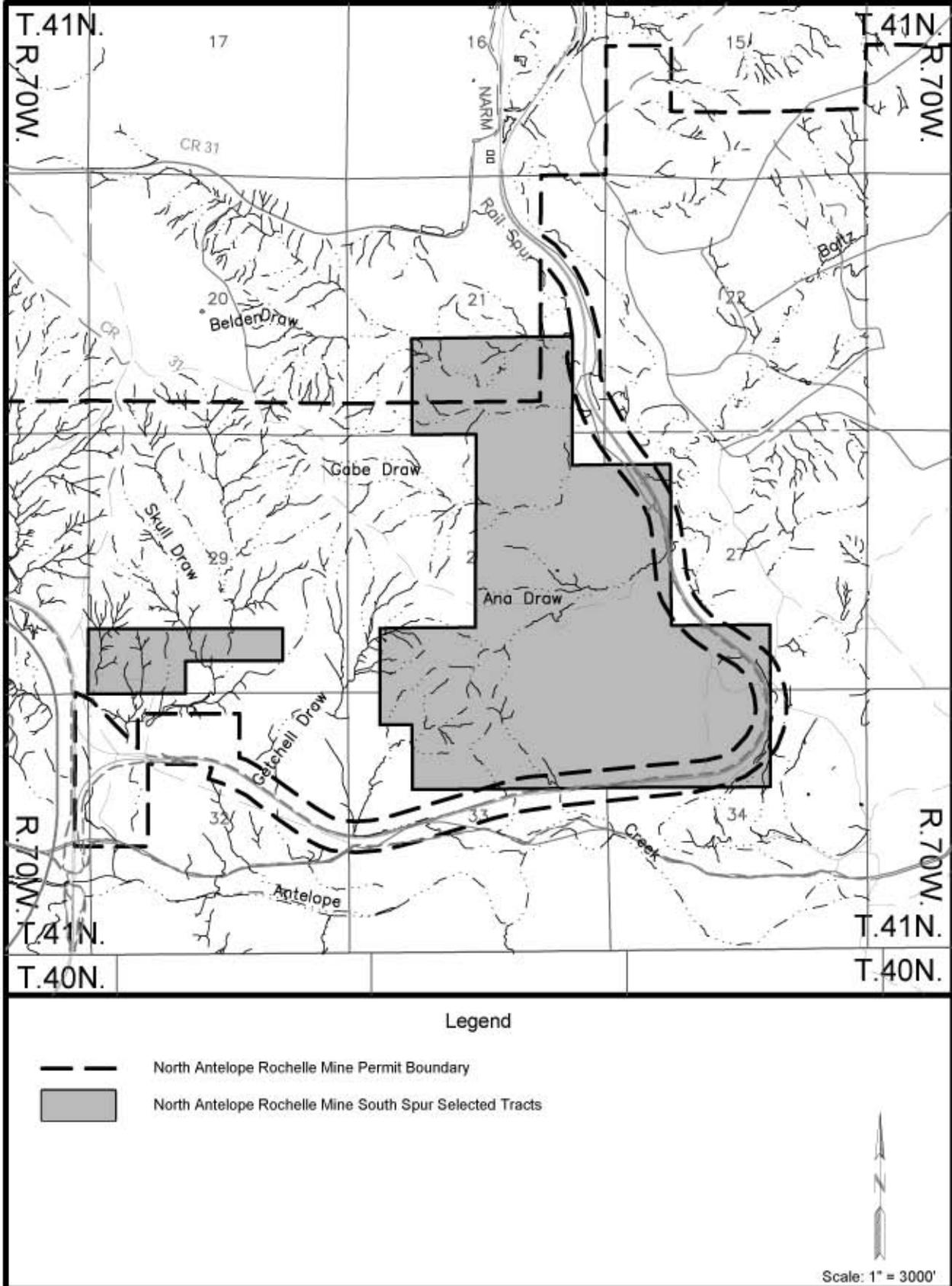


Figure D-3 North Antelope Rochelle Mine South Spur Selected Tracts

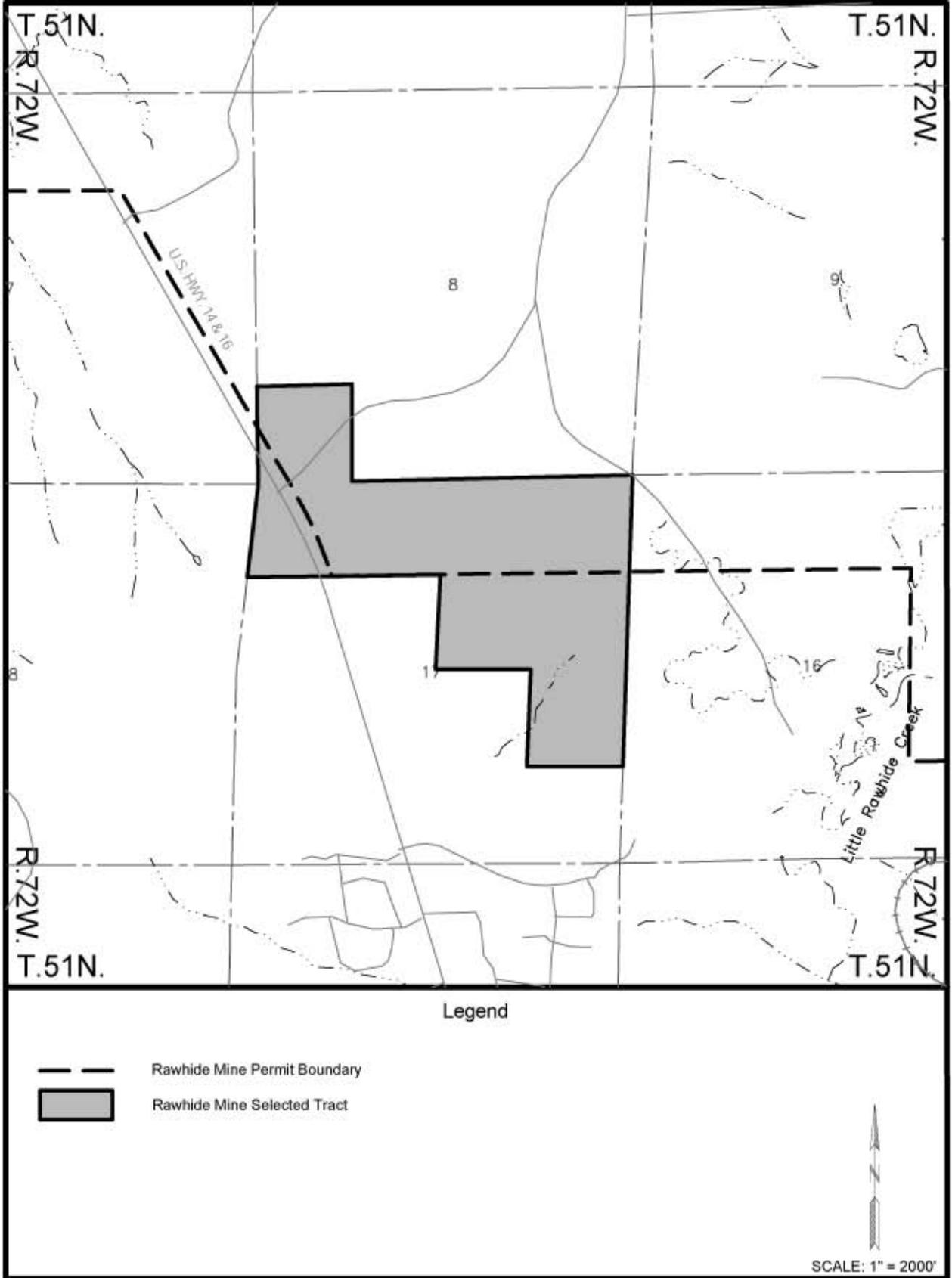


Figure D-4 Rawhide Mine Selected Tract

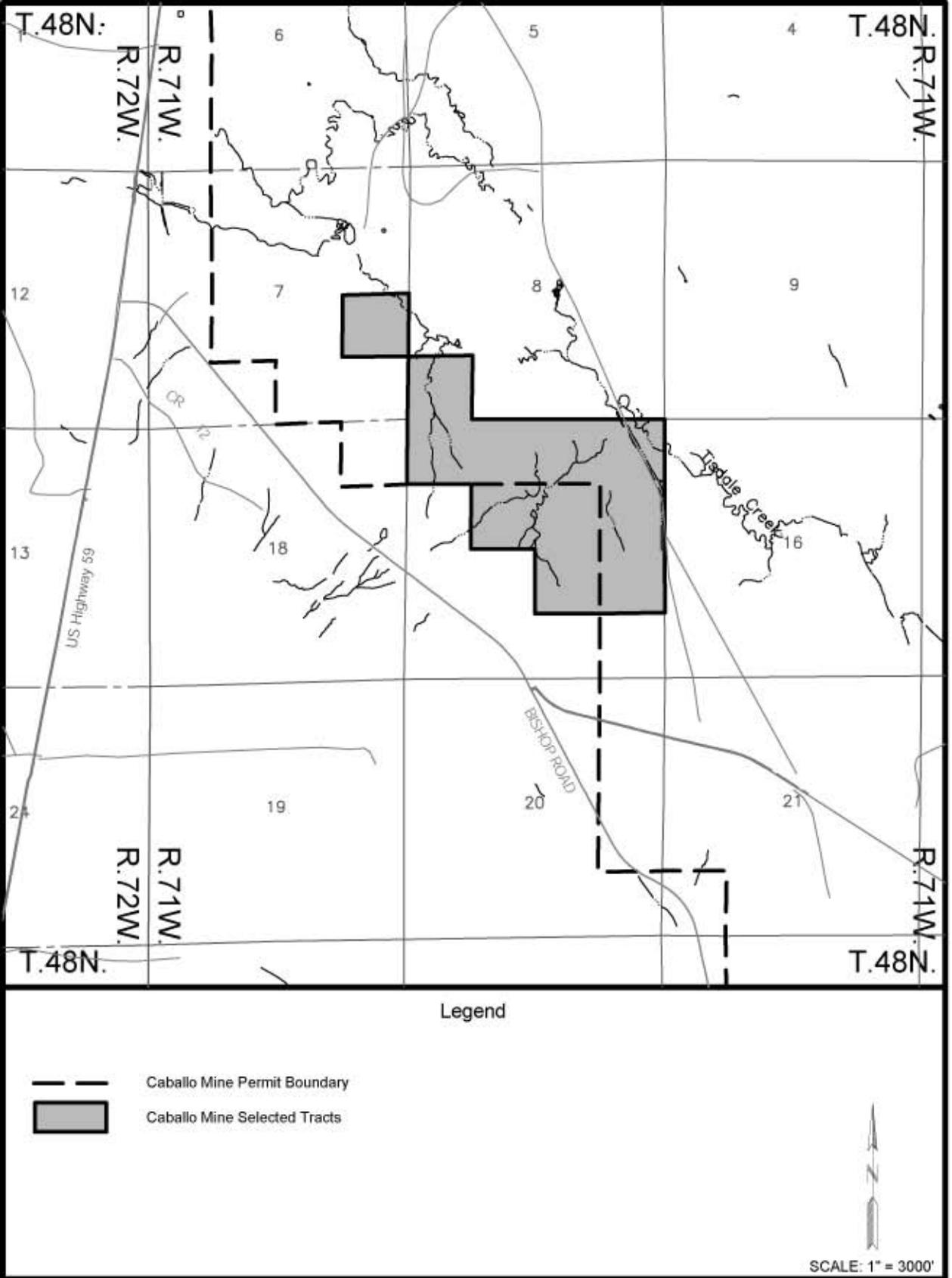


Figure D-5 Caballo Mine Selected Tracts

T. 48 N., R. 70 W., 6th P.M., Campbell County, Wyoming

Section 18: Lots 15-18,

T. 48 N., R. 71 W., 6th P.M., Campbell County, Wyoming

Section 11: Lot 16 (SE1/4),

Section 12: Lots 13, 14, 15 (W1/2, SE1/4),

Section 13: Lot 1 (SW1/4), Lots 2-8, 11-14,

Section 14: Lots 1, 8 (E1/2),

Section 24: Lots 1-3,

Total Acres

921.603 acres

Land descriptions and acreage are based on the BLM Status of Public Domain Land and Mineral Title approved coal plat as of July 2005.

Lands within Gold Mine Draw AVF exchange tract were identified as an alluvial valley floor significant to farming. Mining is precluded in AVF areas under SMCRA. The tract as offered includes approximately 921.6 mineable acres. Powder River estimates that it includes approximately 66.8 million tons of in-place coal, and that about 58.1 million tons of that coal would be recoverable. BLM will independently evaluate the volume and average quality of the coal resources included in the tract as part of the fair market value determination process. BLM's estimate of the mineable reserves and average quality of the coal included in the tract will be published in the exchange notice if the tract is offered for exchange.

The approved Caballo Mine permit (Caballo 2005) includes monitoring and mitigation measures that are required by SMCRA and Wyoming state law. The Gold Mine Draw offered lands have been covered by all baseline studies included in the Caballo Mine permit.

The legal description of the selected tracts of coal lease lands by Powder River under the Proposed Action is as follows:

North Antelope Rochelle Mine – East Burn Tract #1

T. 42 N., R. 69 W., 6th P.M., Campbell County, Wyoming

Section 18: Lot 13 (S1/2),

Section 19: Lots 6 (S1/2), 7, 9, 11(NW1/4), 12 151.091

Total Acres

170.68 acres

North Antelope Rochelle Mine – East Burn Tract #2

T. 42 N., R. 69 W., 6th P.M., Campbell County, Wyoming

Section 19: Lot 15,
Section 29: Lot 4, (W1/2),
Section 30: Lots 5-7,
Total Acres 184.47 acres

North Antelope Rochelle Mine – East Burn Tract #3

T. 42 N., R. 69 W., 6th P.M., Campbell County, Wyoming

Section 29: Lots 5, 12, 13, 14 (SW1/4)
Section 32: Lots 3, (W1/2), 4, 5 (N1/2),
Total Acres 214.798 acres

North Antelope Rochelle Mine – East Burn Tract #4

T. 41 N., R. 69 W., 6th P.M., Campbell County, Wyoming

Section 5: Lots 8, 9, 16
Total Acres 123.50 acres

North Antelope Rochelle Mine – South Spur Tract #5

T. 41 N., R. 70 W., 6th P.M., Campbell County, Wyoming

Section 21: Lots 9 (SW1/4), 10 (S1/2), 11 (S1/2), 14, 15, 16 (W1/2)
Section 27: Lots 4, (S1/2), 5, 12-14, 15 (W1/2)
Section 28: Lots 1 (W1/2, SE1/4), 2, 7-10, 12 (E1/2), 13-15
Section 33: Lots 1-3, 4(NE1/4), 6 (N1/2), 7 (N1/2), 8 (N1/2)
Section 34: Lots 2 (W1/2), 3, 4, 5 (N1/2), 6 (N1/2), 7 (NW1/4)
Total Acres 1072.06 acres

North Antelope Rochelle Mine – South Spur Tract #6

T. 41 N., R. 70 W., 6th P.M., Campbell County, Wyoming

Section 29: Lots 13, 14 (N1/2, SW1/4), 15 (N1/2),
Total Acres 91.285 acres

Rawhide Mine – South Sand Channel Tract #7

T. 51 N., R. 72 W., 6th P.M., Campbell County, Wyoming

Section 8: Lot 13

Section 17: Lots 1-4, 7-9

Total Acres

315.18 acres

Caballo Mine – Caballo West Tract #8

T. 48 N., R. 71 W., 6th P.M., Campbell County, Wyoming

Section 7: Lot 12,

Section 8: Lot 10,

Section 17: Lots 1-4, 6-10,

Total Acres

448.28 acres

The coal estate underlying the tracts is owned by the federal government and administered by the BLM. Most of the surface on the North Antelope Rochelle Mine East Burn tracts (#1-4) is owned by the Forest Service. The surface estate at the South Spur tracts (#5 & 6) at NARM and the tracts at Rawhide Mine (#7) and Caballo Mine (#8) are privately owned.

No Action Alternative

Alternative 1 is the No Action Alternative. Under the No Action Alternative, the lease exchange would not be completed and the selected tracts would not be leased. The two areas at the NARM may be bypassed by mining and the coal may not be recovered. The Rawhide Mine and Caballo Mine tracts could be leased under separate applications.

CONSULTATION TO DATE

The offered and selected tracts are included in the area evaluated for acceptability for further lease consideration as part of the coal screening process. The coal screening process is a four-part process that includes application of the coal unsuitability criteria, which are defined in 43 CFR 3461.5. The coal unsuitability criteria were applied to federal coal lands in Campbell and Converse counties in the early 1980s by the BLM and Forest Service (FS). Consultation with the US Fish and Wildlife Service (FWS) occurred in conjunction with the unsuitability findings under criterion 9 (Critical Habitat for Threatened or Endangered Plant and Animal Species), criterion 11 (Bald or Golden Eagle Nests), criterion 12 (Bald and Golden Eagle Roost and Concentration Areas), criterion 13 (Falcon Nesting Site(s) and Buffer Zone(s), and criterion 14 (Habitat for Migratory Bird Species). In 1993, BLM, FS, and FWS began the process of reapplying these criteria to federal coal lands in Campbell, Converse, and Sheridan Counties. The results of this analysis are included as Appendix D in the 2001 *Approved Resource Management Plan for Public Lands Administered by the Bureau of Land Management Buffalo Field Office*.

Consultation with FWS was previously conducted for the areas within the North Antelope Rochelle Mine's, Rawhide Mine's and Caballo Mine's existing approved mining permit areas, including most of the lands within the selected tracts as part of the mining and reclamation permit approval process. All three of the mines have been in operation for many years. The North Antelope Rochelle Mine went through the lease by application process with an Environmental Impact Statement completed as recently as 2004. The Rawhide Mine and Caballo Mine have both had coal leases added through the Interstate 90 Exchange.

All three of the operations comply with FWS requirements necessary to maintain their WDEQ/LQD mine permits. The BLM sent out a scoping letter dated July 21, 2005 and the FWS responded in a letter dated August 17, 2005.

In that letter the FWS provided BLM the following list of federally-listed threatened and endangered species, or species proposed for listing that may be present in the project area.

Bald eagle (*Haliaeetus leucocephalus*): threatened

Black-footed ferret (*Mustela nigripes*): endangered

Ute ladies'-tresses (*Spiranthes diluvialis*): threatened

SPECIES HABITAT, OCCURRENCE, AND EFFECTS OF THE PROPOSED PROJECT

The North Antelope Rochelle Mine, Rawhide Mine and Caballo Mine, currently operated by Powder River Coal Company, have conducted all required baseline wildlife studies and annual monitoring required by their WDEQ/LQD permits. Thunderbird Wildlife Consulting, Inc. (TWC), formerly Powder River Eagle Studies (PRES) have conducted annual wildlife monitoring surveys at all three operations from 1984 through 2005. The study area has included all of the selected tracts throughout TWC's monitoring timeframe. The wildlife monitoring is designed to meet the WDEQ/LQD and federal requirements for annual monitoring and reporting of wildlife activity on coal mining areas. Detailed procedures and site-specific requirements have been carried out as approved by Wyoming Game and Fish Department (WGFD) and FWS. The monitoring program is conducted in accordance with appendix B of WDEQ/LQD Coal Rules and Regulations.

Background information on T&E species in the vicinity of the selected tracts was drawn from several sources, including WGFD and FWS records and personal contacts with WGFD and FWS biologists.

Site-specific data for the proposed lease area was obtained from sources including WDEQ/LQD permit applications and annual reports for the three operations.

Threatened Species

Bald Eagle (*Haliaeetus leucocephalus*)

Biology and Habitat Requirements

On February 14, 1978, the bald eagle was listed as endangered in all of the conterminous United States except Minnesota, Wisconsin, Michigan, Oregon, and Washington, where it was classified as threatened (43 F.R. 6233). The FWS reclassified the bald eagle from endangered to threatened throughout its range in the lower 48 states on July 12, 1995 (60 F.R. 36000). The bald eagle was proposed for delisting on July 6, 1999 (64 F.R. 36454). Currently, the proposal has not been finalized or withdrawn.

Bald eagles nest primarily in remote areas that are free of disturbance and contain large trees that are within one mile of water bodies containing reliable fisheries. In Wyoming, this species builds large nests in the crowns of large mature trees such as cottonwoods or pines. Typically, there are alternate nests within or in close proximity to the nest stand. Snags and open-canopied trees near the nest site and foraging areas provide favorable perch sites. Old-growth stands with their structural diversity and open canopies are an important habitat for bald eagles. This species is a common breeding

resident in some areas of Wyoming. Bald eagles use mixed coniferous and mature cottonwood-riparian areas near large lakes or rivers as nesting habitat (Luce et al. 1999).

Food availability is probably the single most important determining factor for bald eagle distribution and abundance (Steenhof 1976). Fish and waterfowl are the primary sources of food. Big game and livestock carrion, as well as larger rodents (prairie dogs) also can be important dietary components where these resources are available (Ehrlich et al. 1988). Bald eagles are opportunistic foragers. They prefer to forage in areas with the least human disturbance (FWS 1978, McGarigal et al. 1991).

Bald eagles that have open water or alternate food sources near their nesting territories may stay for the winter; other eagles migrate southward to areas with available prey. During migration and in winter, eagles often concentrate on locally abundant food resources and tend to roost communally. Communal roosts usually are located in stands of mature old growth conifers or cottonwoods. Large, live trees in sheltered areas provide a favorable thermal environment and help minimize the energy stress encountered by wintering eagles. Communal roosting also may facilitate food finding (Steenhof 1976) and pair bonding. Freedom from human disturbance is also important in communal roost site selection (Steenhof et al. 1980, U.S. Bureau of Reclamation 1981, FWS 1986, Buehler et al. 1991). Continued human disturbance of a night roost may cause eagles to abandon an area (Hansen et al. 1981, Keister 1981). The proximity of night roosts to the other habitats required by wintering eagles, such as hunting perches and feeding sites, is important (Steenhof et al. 1980). Roosts may be several miles from feeding sites. The absence of a suitable roost may limit the use of otherwise suitable habitat.

Existing Environment

Bald eagles are relatively common winter residents and migrants in northeastern Wyoming's PRB. No suitable roosting habitat, known nest sites, or concentrated prey or carrion sources for bald eagles have been identified during baseline or annual wildlife surveys in the selected tracts. Historically, this species has infrequently been seen foraging in the general vicinity of all three existing operations. The 2005 annual wildlife surveys conducted by TWC in the selected tract and the accessible 2-mile perimeter, which included surveys for bald eagle nests and potential roost sites, identified no nests or roosts.

Effects of the Proposed Project

Mining the federal coal included in the selected tracts, if the tracts are leased under the Proposed Action, may affect, but is not likely to adversely affect, bald eagles or their habitat.

If the federal coal in the selected tracts is leased, there would be an expansion in the area of human disturbance on the tract that could impact wintering bald eagles in the area. Freedom from disturbance is important in forage, nest, and roost site selection. Disturbance to nesting eagles can cause nest failure, nest abandonment, and unsuccessful fledging of young. There have not been and currently are no known nest sites on the selected tracts or within the anticipated mine permit area under the Proposed Action. No suitable roosting habitat or concentrated prey or carrion sources for bald eagles are present on the selected tracts under the Proposed Action. Bald eagle foraging habitat would be lost during mining and before reclamation. The loss of any potential prey habitat would be long term as habitat function and suitability would not be established in the short term following reclamation. Foraging habitat lost during mining would be replaced during reclamation. Eagles may alter foraging patterns as they avoid active mining areas. The potential for bald eagles to collide with or be electrocuted by electric power lines on the mine site would be minimal due to use of properly designed power lines to avoid electrocution of raptors, which is required by the Wyoming Coal Mining Rules and Regulations. Use of the roads accessing the selected tracts by mine-related traffic would continue when the tracts are mined, which may result in vehicular collisions and roadside carcasses for an additional period of time. The presence of roadside carcasses can result in bald eagle foraging along roads, which creates the potential for road kills of foraging bald eagles to occur. The applicant has not projected an increase in employees if the tracts are leased and therefore an increase in the volume or frequency of traffic on roads accessing the three operations is not anticipated.

Cumulative Effects

Mineral development, including coal bed natural gas (CBNG) development, conventional oil and gas development, and surface coal mining, is a leading cause of habitat loss within the PRB. CBNG development has occurred and is proposed in the analysis area. Surface coal mining has been ongoing in the area for more than 25 years. In the *Final Biological and Conference Opinion for the Powder River Basin Oil and Gas Project*, the FWS states that they believe that “as a direct result of the construction of approximately 7,136 miles of new improved roads and 5,311 miles of overhead distribution lines, there will be direct loss of bald eagles” in the PRB (FWS 2002a). Bald eagle prey habitat loss would likely be long term as habitat function and suitability would not be reestablished when reclamation is complete.

Ute ladies'-tresses (*Spiranthes dilavialis*)

Biology and Habitat Requirements

Ute ladies'-tresses was listed as threatened on January 17, 1992 due to a variety of factors, including habitat loss and modification, and hydrological modifications of existing and potential habitat areas. At the time of listing, Ute ladies'-tresses was only known from Colorado, Utah, and extreme eastern Nevada. It was next discovered in Idaho in September 1996. It is currently known from western Nebraska, southeastern Wyoming, north-central Colorado, northeastern and southern Utah, east-central Idaho, southwestern Montana, and central Washington.

Ute ladies'-tresses is a perennial herb with erect, glandular-pubescent stems 12 to 50 centimeters tall arising from tuberous-thickened roots. This species flowers from late July to September. Plants probably do not flower every year and may remain dormant below ground during drought years. The total known population of this species is approximately 25,000 to 30,000 individuals. Occurrences range in size from one plant to a few hundred individuals.

Ute ladies'-tresses occurs primarily on moist, subirrigated or seasonally flooded soils in valley bottoms, gravel bars, old oxbows, or floodplains bordering springs, lakes, rivers, or perennial streams at elevations between 1,780 and 6,800 feet (ft) in elevation (Fertig and Beauvais 1999). Suitable soils vary from sandy or coarse cobbley alluvium to calcareous, histic or fine-textured clays and loams. Populations have been documented from alkaline sedge meadows, riverine floodplains, flooded alkaline meadows adjacent to ponderosa pine, Douglas-fir woodlands, sagebrush steppe, and streamside floodplains. Some occurrences are also found on agricultural lands managed for winter or early season grazing or hay production. Known sites often have low vegetative cover and may be subjected to periodic disturbances such as flooding or grazing. Populations are often dynamic and "move" within a watershed as disturbances create new habitat or succession eliminates old habitat (Fertig and Beauvais 1999).

The orchid is well adapted to disturbances from stream movement and is tolerant of other disturbances (grazing) that are common to grassland riparian habitats (FWS 1995). Ute ladies'-tresses colonize early successional riparian habitats such as point bars, sand bars, and low-lying gravelly, sandy, or cobbley edges, persisting in those areas where the hydrology provides continual dampness in the root zone through the growing season. The orchid establishes in heavily disturbed sites, such as revegetated gravel pits, heavily grazed riparian edges, and along well-traveled foot trails on old berms (FWS 1995). The species occurs primarily in areas where the vegetation is relatively open and not overly dense, overgrown, or overgrazed. Ute ladies'-tresses orchid is commonly associated with horsetail, milkweed, verbena, blue-eyed grass, reedgrass, goldenrod, and arrowgrass.

This species is known from four occurrences in Wyoming, within Converse, Goshen, Laramie, and Niobrara counties, all discovered between 1993 and 1997 (Fertig and

Beauvais 1999). One of these occurrences is recorded from northwestern Converse County, within the Antelope Creek watershed.

Existing Environment

Potential habitat for Ute ladies-tresses orchid was surveyed within the selected tracts in 2005. No potential habitat was identified at any of selected tracts due to lack of sufficient hydrologic support for the orchid and clay soils. One potential habitat area was found on the offered tract, although no orchids were observed. This area would be preserved if the Proposed Action were approved. The surveys were managed and conducted by BKS Environmental Associates, Inc. personnel who are recognized as being qualified to conduct Ute ladies'-tresses surveys.

Effects of the Proposed Project

Mining the federal coal included in the selected tracts, if the tracts are leased under the Proposed Action, may affect, but is not likely to adversely affect, Ute ladies'-tresses.

One potential habitat was identified on the Gold Mine Draw tract, but no orchids were observed. This potential habitat would be preserved if the tracts are exchanged as proposed. No suitable habitat was identified during the surveys of the selected tracts. Ute ladies'-tresses individuals have not been found during surveys conducted for other surface coal mines near the selected tracts or other surveys in this area of Wyoming. Because of this plant's ability to persist below ground or above ground without flowering, single season surveys that meet the current FWS survey guidelines may not detect populations. If undetected populations are present, they could be lost to surface-disturbing activities.

Cumulative Effects

Alterations of stream morphology and hydrology are believed to have destroyed Ute ladies'-tresses from most of its historical range (FWS 2002b). Disturbance and reclamation of streams by surface coal mining may alter stream morphology and hydrology. Water produced by CBNG development and discharged on the surface may also alter stream morphology and hydrology. Jurisdictional wetlands located within the selected tracts that are destroyed by mining operations would be replaced in accordance with the requirements of section 404 of the Clean Water Act, as determined by the Corps of Engineers (COE). The replaced wetlands may not duplicate the exact function and landscape features of the pre-mine wetlands. COE considers the type and function of each jurisdictional wetland that will be impacted and determines the ratio of restored wetlands to disturbed wetlands. If the COE determines that the restored wetlands will not completely replace the type and function of the original wetlands, they

may require restoration of additional acres. WDEQ/LQD allows and sometimes requires mitigation of nonjurisdictional wetlands affected by mining, depending on the values associated with the wetland features.

Endangered Species

Black-footed Ferret (*Mustela nigripes*)

Biology and Habitat Requirements

The black-footed ferret is a federally-listed endangered species. The black-footed ferret historically occurred throughout Texas, Oklahoma, New Mexico, Arizona, Utah, Kansas, North and South Dakota, Montana, Wyoming, Nebraska, and Colorado. The black-footed ferret, a nocturnally active mammal, is closely associated with prairie dogs, depending almost entirely on the prairie dog for its survival. The decline in ferret populations has been attributed to the reduction in the extensive prairie dog colonies that historically existed in the western US. Ferrets may occur within colonies of white-tailed or black-tailed prairie dogs. The FWS has determined that, at a minimum, potential habitat for the black-footed ferret must include a single white-tailed prairie dog colony greater than 200 acres, or a complex of smaller colonies within a 4.3 mile (7 km) radius circle totaling 200 acres (FWS 1989). Minimum colony size for black-tailed prairie dog is 80 acres (FWS 1989). The last known wild population of black-footed ferrets was discovered in Meeteetse, Wyoming. Individuals from this population were captured and raised in protective captive breeding facilities in an effort to prevent the species' extinction (Clark and Stromberg 1987).

Recent survey efforts in the Shirley Basin have identified a population at this former re-introduction site. This is the only known population in Wyoming. There are no prairie dog towns located within the Rawhide Mine and Caballo Mine selected tracts. There are prairie dog towns on and adjacent to the North Antelope Rochelle East Burn tracts. Their locations are presented on Figure 3.4-4 in chapter 3

Existing Environment

The selected tracts are within the historical range of the black-footed ferret, although no black-footed ferrets are presently known to occur within northeastern Wyoming. Surveys to identify any populations of this species within the area administered by the BLM Buffalo Field Office (Campbell, Johnson, and Sheridan counties, Wyoming), including multiple years of wildlife surveys covering the selected tracts and surrounding area, have been unsuccessful. This endangered species is found almost exclusively living in prairie dog colonies. The Bureau of Sport Fisheries and Wildlife estimated that there were approximately 49,000 remaining acres of black-tailed prairie dog colonies in Wyoming in 1961. Strychnine and 1080 poisoning was banned in 1972, but colonies had declined to less than the estimated 1961 levels in Wyoming in the intervening time.

Increases in occupied black-tailed prairie dog habitat did occur following the ban of strychnine and 1080, but the black-tailed prairie dog population has been declining recently due to the impacts of sylvatic plague combined with loss of suitable habitat and inadequate regulatory mechanisms (FWS 2000). During the 1980s, the WGFD, in cooperation with other agencies, conducted searches for black-footed ferrets in Wyoming in the places they were most likely to be found, but these searches were not successful, according to Martin Grenier with the WGFD (Martin Grenier, personal communication, 10/14/2003). The FWS has been coordinating with the WGFD about the current and historic status of prairie dog towns throughout Wyoming and reviewing the history of black-footed ferret surveys to determine whether black-footed ferret survey guidelines should continue to be applied across the entire state. Through this process, the FWS has developed a list of blocks of habitat that are not likely to be inhabited by black-footed ferrets and for which surveys for ferrets are no longer recommended. All black-tailed prairie dog towns in Wyoming were cleared from recommendation for ferret surveys through this process (FWS 2004).

No evidence of ferrets has ever been recorded by qualified biologists during general or specific surveys in the selected tracts.

Effects of the Proposed Project

Mining the federal coal included in the selected tracts, if the tracts are leased under the Proposed Action, will have no effect on black-footed ferrets.

Black-tailed prairie dog occupied habitat has declined significantly from historic estimates and the species seems to be scattered throughout its historic range in eastern Wyoming. Prior to 1972, use of strychnine and 1080 to poison black-tailed prairie dogs contributed to declines in their populations in Wyoming. Recent declines are largely attributed to sylvatic plague and are likely to continue (FWS 2000). The reductions in black-tailed prairie dog populations reduced the potential for black-footed ferret survival in northeastern Wyoming. Searches of the best remaining black-footed ferret habitat in Wyoming during the 1980s were unsuccessful in finding any ferrets. Baseline wildlife surveys and annual wildlife surveys conducted for over 25 years by mines in the area have also been unsuccessful in finding any black-footed ferrets or signs of black-footed ferrets.

Cumulative Effects

Mineral development within black-tailed prairie dog colonies is a leading cause of ferret habitat loss in the PRB. Surface coal mining tends to have more intense impacts on fairly localized areas, while oil and gas development tends to be less intensive but spread over larger areas. Oil and gas development and mining activities have requirements for reclamation of disturbed areas as the resources are depleted. The vegetation cover in reclaimed areas may differ from undisturbed areas. Surface coal

mines re-establish species in the reclamation seed mixtures in their approved WDEQ/LQD permit. The majority of the approved species are native to the area; however reclaimed areas may serve different ecosystem functions than those served by the undisturbed vegetation communities and habitats. Natural shifts in habitat composition or distribution over the long term could also increase or decrease potential habitat for prairie dogs in reclaimed areas.

Potential black-footed ferret habitat is also affected by other impacts to prairie dog populations. Plague can infect and eliminate entire prairie dog colonies (see black-tailed prairie dog discussion presented below). Poisoning and recreational shooting may locally reduce prairie dog populations, but seldom completely eliminate colonies.

SUMMARY OF DETERMINATIONS

Table D-1 summarizes the determinations for federally listed threatened, endangered, proposed, and candidate species in the area of the selected tracts that may result from implementing the Proposed Action.

**TABLE D-1
EVALUATION OF EFFECTS ON FEDERAL THREATENED,
ENDANGERED, PROPOSED, AND CANDIDATE SPECIES
IN THE AREA OF THE SELECTED TRACTS**

Status	Name	Potential Effect
Threatened	Bald eagle <i>(Haliaeetus leucocephalus)</i>	May affect ¹
	Ute ladies' - tresses <i>(Spiranthes diluvialis)</i>	May effect ¹
Endangered	Black-footed ferret <i>(Mustela nigripes)</i>	No effect

¹ Not likely to adversely affect individuals or populations.

REGULATORY REQUIREMENTS AND MITIGATION

The issuance of a federal coal lease grants the lessee the exclusive right to mine the coal, subject to the terms and conditions of the lease. Lease ownership is necessary for mining federal coal, but lease ownership does not authorize mining operations. Surface coal mining operations are regulated in accordance with the requirements of Wyoming State regulations. The SMCRA gives the Office of Surface Mining Reclamation and Enforcement (OSM) primary responsibility to administer programs that regulate surface coal mining operations and the surface effects of underground coal mining operations. Pursuant to section 503 of SMCRA, the WDEQ developed, and in November 1980 the Secretary of the Interior approved, a permanent program authorizing WDEQ to regulate surface coal mining operations and surface effects of underground mining on nonfederal lands within Wyoming. In January 1987, pursuant to section 523(c) of SMCRA, WDEQ entered into a cooperative agreement with the Secretary of the Interior authorizing WDEQ to regulate surface coal mining operations and surface effects of underground mining on federal lands within the state. In order to get approval of this cooperative agreement, the state had to demonstrate that the state laws and regulations are no less effective than, meet the minimum requirements of, and include all applicable provisions of SMCRA.

If the selected tracts are leased under the Proposed Action, they would be maintenance leases for each of the three existing operations, which all currently have both an approved Mineral Leasing Act of 1920 (MLA) mining plan and an approved state mining and reclamation permit. In the case of maintenance leases, the existing MLA mining plan and state mining and reclamation plan must be amended to include the newly leased areas before they can be mined. In order to amend the existing MLA mining plan and state mining and reclamation permit, the company would be required to submit a detailed permit application package to WDEQ and OSM before starting surface coal mining operations on the newly acquired leases. WDEQ/LQD would review the permit application package to insure that the permit application complies with the permitting requirements, and that the coal mining operation will meet the performance standards of the approved Wyoming program. If the permit application package does comply, WDEQ would issue the applicant an amended permit that would allow the permittee to extend coal mining operations onto the newly acquired leases. OSM, BLM, and other federal agencies review the permit application package to ensure it complies with the terms of the coal lease, the MLA, NEPA, and other federal laws and regulations. OSM would recommend approval, approval with conditions, or disapproval of the MLA mining plan to the Assistant Secretary of the Interior, Land and Minerals Management.

Protection of fish, wildlife, and related environmental values is required under the Wyoming Coal Mining Rules and Regulations, Chapter 4, Section (2)(r)(iii) which state:

“No surface mining activity shall be conducted which is likely to jeopardize the continued existence of endangered or threatened species listed by the State or the Secretary of the Interior or which will result in the destruction or adverse modification of designated critical habitats of such species in violation of the

Endangered Species Act (16 U.S.C. 1531 et seq.). No surface mining activity shall be conducted in a manner which would result in the unlawful taking of a bald or golden eagle, its nest, or any of its eggs. The Administrator shall consult with the State and Federal Fish and Wildlife Agencies to identify whether and under what conditions the operation may continue under this provision.”

In addition to requiring the operator to minimize disturbances and adverse impacts on fish, wildlife, and related environmental values and prohibiting any surface mining activity which is likely to jeopardize the continued existence of endangered or threatened species, the regulations require that the operator use the best technology currently available to minimize electrocution hazards to raptors; locate and operate haul and access roads to avoid or minimize impacts on important fish and wildlife species; and design fences, conveyors, and other potential barriers to permit passage of large mammals. Both the state and federal regulations require Section 7 consultation prior to approval of a mining and reclamation plan and a MLA mining plan. Additional mitigation measures to ensure compliance with the ESA can be developed when the detailed mining plan, which identifies the actual location of the disturbance areas, how and when they would be disturbed, and how they would be reclaimed, is developed and reviewed for approval. At the leasing stage, a detailed mining and reclamation plan is not available for evaluation or development of appropriate mitigation measures.

The following is a partial list of measures that the state of Wyoming has required as part of existing mining and reclamation permits in accordance with the state regulatory requirements and which are:

- avoiding bald eagle disturbance;
- restoring bald eagle foraging areas disturbed by mining;
- using raptor safe power lines;
- surveying for Ute ladies'-tresses if habitat is present;
- surveying for black-footed ferrets in prairie dogs towns potentially affected by mining.

CUMULATIVE IMPACTS

If the selected tracts are leased as proposed and Powder River Coal Company acquires and mines the coal in the selected tracts, the mining operations could contribute to cumulative effects to T&E plant and wildlife species in the PRB. Existing habitat-disturbing activities in the PRB in Wyoming and Montana include surface coal mining; conventional oil and gas and CBNG development; uranium mining; sand, gravel, and scoria mining; ranching; agriculture; road, railroad, and power plant construction and operation; recreational activities; and rural and urban housing development. Mining and construction activities, agriculture, and urban development tend to have more intense impacts on fairly localized areas, while ranching, recreational activities, and oil and gas development tend to be less intensive but spread over larger areas. Oil and gas development and mining activities have requirements for reclamation of disturbed areas as resources are depleted. The net area of energy disturbance in the Wyoming PRB

has been increasing. In the short term, this means a reduction in the available habitat for threatened, endangered, proposed, and candidate plant and wildlife species. In the long term, habitat is being and will continue to be restored as reclamation proceeds. Oil and gas exploration and production have been ongoing in the PRB for more than 100 years. Conventional (non CBNG) oil and gas fields are, for the most part, concentrated in the central and southern parts of the structural basin. Development of the CBNG resources from the coal beds is a more recent occurrence, with CBNG production in the Wyoming PRB starting in the late 1980s. According to the Wyoming Oil and Gas Conservation Commission, there were approximately 15,040 oil and gas wells producing in the Wyoming PRB as of October 2003. Most (approximately 12,530) of those wells are CBNG wells, the remainder (approximately 2,510) are conventional oil or gas wells (Wyoming Oil and Gas Conservation Commission 2003). Additional wells have been drilled in the basin but have been abandoned or are not yet producing. BLM recently completed an environmental impact statement analyzing projected CBNG and conventional oil and gas development in the Wyoming PRB over the next 10 years. The *Final Environmental Impact Statement and Proposed Plan Amendment for the Powder River Basin Oil and Gas Project* (BLM 2003) analyzed the potential impacts of constructing and operating about 39,400 new CBNG wells and 3,200 new conventional wells and associated facilities, starting in 2002 and continuing for 10 years. The project area for this analysis encompasses approximately eight million acres, and includes all or portions of Campbell, Converse, Sheridan, and Johnson counties in northeastern Wyoming. Total projected short-term and long-term disturbance associated with the development under the Preferred Alternative was estimated at 211,643 acres and 102,658 acres respectively. As stated previously, in the *Final Biological and Conference Opinion for the Powder River Basin Oil and Gas Project*, the FWS states that they believe that “as a direct result of the construction of approximately 7,136 miles of new improved roads and 5,311 miles of overhead distribution lines, there will be direct loss of bald eagles” in the PRB (FWS 2002a).

BLM estimates that the existing federal coal leases in the Wyoming PRB include approximately 121,200 acres. The currently pending federal coal LBA tracts include approximately 17,416 acres. The majority of the coal in the areas permitted for surface coal mining is federal, but some state and private leases are included within some of the existing mine permit areas. All of the existing federal coal leases are concentrated near the outcrop of the Wyodak coal bed, which is located along the eastern edge of the CBNG project area discussed above. These active coal operations along the Wyodak outcrop had disturbed approximately 68,794 acres as of 2003. Approximately 23,459 of those acres of disturbance are occupied by “permanent” mine facilities such as roads, buildings, and coal handling facilities, which are not available for reclamation. Of the remaining 24,097 acres which represent areas of disturbance available for reclamation, approximately 21,238 acres had been reclaimed. This information is compiled from BLM lease and WDEQ/LQD mining and reclamation permit databases.

There are an estimated 9,500 additional acres of disturbance occupied by facilities indirectly associated with surface coal mining (railroad main line and electrical transmission line).

In addition to the ongoing coal leasing and mining and oil and gas development, there are other projects that are in progress or have been proposed. These projects include the Wygen II coal-fired power plant proposed near the Wyodak Mine, the Two Elk coal-fired power plant proposed near the Black Thunder Mine, and the proposed DM&E railroad line. Other power plants have been proposed in this area but have not progressed beyond very preliminary stages. Most of these proposed projects would be constructed within or adjacent to areas of current disturbance. The proposed DM&E railroad line would represent a new corridor of disturbance across the eastern PRB if it is approved and constructed.

The total acreage directly affected by surface coal mining and oil and gas development would not be disturbed simultaneously. Some of the disturbed acreage would be reclaimed or be in the process of being reclaimed as new disturbances are initiated in other areas.

There would also be cumulative effects to T&E plant and wildlife resources as a result of indirect impacts. One factor is the potential import and spread of noxious weeds around roads and facilities. Noxious weeds have the ability to displace native vegetation and hinder reclamation efforts. Control of noxious weeds is addressed in surface coal mining and reclamation plans. If weed mitigation and preventative procedures are applied to all construction and reclamation practices, the impact of noxious weeds on T&E plants and wildlife would be minimized.

In reclaimed areas, vegetation cover often differs from undisturbed areas. In the case of surface coal mines, re-established vegetation would be dominated by species mandated in the reclamation seed mixtures (approved by WDEQ). The majority of the species in the approved reclamation seed mixtures are native to the area; however, reclaimed areas may not serve ecosystem functions presently served by undisturbed vegetation communities and habitats. In the short-term in particular, species composition, shrub cover, and other environmental factors are likely to differ from pre-disturbance vegetation communities and habitats. Establishment of noxious weeds and alteration of vegetation in reclaimed areas has the potential to alter T&E plant and wildlife habitat composition and distribution.

Potential adverse effects to listed and proposed species that have occurred and would continue to occur as a result of existing and potential future activities in the PRB would include direct loss of habitat, indirect loss of habitat due to human and equipment disturbance, habitat fragmentation, displacement of bald eagle prey species and the resultant change in bald eagle foraging, and mortality caused by equipment activities, motor vehicle collisions, power line collisions, and power line electrocution. The existing mines have developed mitigation procedures, as required by SMCRA (30 CFR 816.97) and Wyoming state regulations, to protect T&E species. These procedural requirements would be extended to include mining operations on the selected tracts, if they are leased as proposed and after required detailed plans to mine the coal and reclaim the mined-out areas are developed and approved.

BLM SENSITIVE SPECIES EVALUATION

Introduction

Wyoming BLM has prepared a list of sensitive species to focus species management efforts towards maintaining habitats under a multiple use mandate. The authority for this policy and guidance comes from the ESA 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., General Program Delegation, Director, BLM.

The goals of the sensitive species 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.

Species Occurrence and Habitat Description

Sensitive species were listed for the BLM Buffalo Field Office within its range. Sensitive species do or could occur on or in the area of the selected tracts. Specialized habitat requirements (caves, cliffs, calcareous rock outcrops) make occupation for other sensitive species unlikely. Table D-2 lists BLM sensitive species and summarizes their habitat requirements. Please refer to the wildlife sections of Chapters 3 and 4 for additional discussion about the occurrence of and potential impacts to upland game birds, including sage grouse, raptors and Migratory Birds of Management Concern in the area of the selected tracts.

**TABLE D-2
SENSITIVE SPECIES LIST - BUFFALO FIELD OFFICE**

Common Name (scientific name)	Habitat and Occurrence in The Selected Tracts	Presence¹	Project Effects²	Rationale
<i>Amphibians</i>				
Northern leopard frog (<i>Rana pipiens</i>)	Beaver ponds, permanent water in plains and foothills	S	MIIH	Stock reservoirs & natural pools will be impacted.
Spotted frog (<i>Ranus pretiosa</i>)	Ponds, sloughs, small streams.	NP	NI	Prairie habitat not mountain.
<i>Birds</i>				
Baird's sparrow (<i>Ammodramus bairdii</i>)	Grasslands, weedy fields. Occurrence not recorded	S	MIIH	Sagebrush cover will be affected.
Brewer's sparrow (<i>Spizella breweri</i>)	Basin-prairie shrub. Regular breeder.	K	MIIH	Sagebrush cover will be affected.
Burrowing owl (<i>Athene cunicularia</i>)	Grasslands, basin-prairie shrub. Infrequent breeder.	K	MIIH	Grassland and shrubland habitats will be affected.
Ferruginous hawk (<i>Buteo regalis</i>)	Basin-prairie shrub, grasslands, rock outcrops. Historical breeder.	K	MIIH	Grassland and shrubland habitats will be affected.
Greater sage-grouse (<i>Centrocercus urophasianus</i>)	Basin-prairie shrub, mountain-foothill shrub. Occasional breeder.	K	MIIH	Sagebrush cover will be affected.
Loggerhead shrike (<i>Lanius ludovicianus</i>)	Basin-prairie shrub, mountain-foothill shrub. Infrequently observed.	K	MIIH	Sagebrush cover will be affected.
Long-billed curlew (<i>Numenius americanus</i>)	Grasslands, plains, foothills, wet meadows. Infrequent spring migrant.	K	MIIH	Grassland & wet meadow habitats will be affected.
Mountain plover (<i>Charadrius montanus</i>)	Short-grass prairie and shrub-steppe.	K	MIIH	Shrubland will be affected.
Northern goshawk (<i>Accipiter gentilis</i>)	Conifer and deciduous forests.	NP	NI	Forest habitat limited to cottonwood shelterbelt.
Peregrine falcon (<i>Falco peregrinus</i>)	Cliffs. Never recorded	NP	NI	No nesting habitat.
Sage sparrow (<i>Amphispiza billneata</i>)	Basin-prairie shrub, mountain-foothill shrub. Never recorded	S	MIIH	Sagebrush cover will be affected.
Sage thrasher (<i>Oreoscoptes montanus</i>)	Basin-prairie shrub, mountain-foothill shrub. Rarely observed.	K	MIIH	Sagebrush cover will be affected.
Trumpeter swan (<i>Cygnus buccinator</i>)	Lakes, ponds, rivers	NP	NI	Suitable habitat not present.
White-faced ibis (<i>Plegadis chihi</i>)	Marshes, wet meadows	NP	NI	Permanently wet meadows not present.
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	Open woodlands, streamside willow and alder groves. Never recorded	NP	NI	Shrub or forest riparian habitats not present.

**TABLE D-2
SENSITIVE SPECIES LIST - BUFFALO FIELD OFFICE**

Common Name (scientific name)	Habitat and Occurrence in The Selected Tracts	Presence¹	Project Effects²	Rationale
<i>Fish</i>				
Yellowstone cutthroat trout (<i>Oncorhynchus clarki bouvieri</i>)	Mountain streams and rivers in Yellowstone River drainage	NP	NI	Outside species range.
<i>Mammals</i>				
Black-tailed prairie dog (<i>Cynomys ludovicianus</i>)	Shortgrass and mixed-grass prairie.	K	MIIH	Existing colonies and habitat would be affected.
Fringed myotis (<i>Myotis thysanodes</i>)	Conifer forests, woodland chaparral, caves and mines	NP	NI	Habitat not present.
Long-eared myotis (<i>Myotis evotis</i>)	Conifer and deciduous forest, caves and mines	NS	NI	Limited cottonwood habitat.
Spotted bat (<i>Euderma maculatum</i>)	Cliffs over perennial water, basin-prairie shrub	NP	NI	Habitat not present
Swift fox (<i>Vulpes velox</i>)	Grasslands	S	MIIH	Grassland habitat will be affected.
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	Forests, basin-prairie shrub, caves and mines	NS	NI	Limited cottonwood habitat.
Plants				
Porter's sagebrush (<i>Artemisia porteri</i>)	Sparsely vegetated badlands of ashy or tufaceous mudstone and clay slopes 5300-6500 ft.	NP	NI	Habitat not present.
William's wafer parship (<i>Cymopterus williamsii</i>)	Open ridgetops and upper slopes with exposed limestone outcrops or rockslides, 6000-8300 ft.	NP	NI	Habitat not present.

Notes

¹Presence

- 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.

²Project Effects

- NI** No impact.
- MIIH** May impact individuals or habitat but will not likely contribute to a trend towards federal listing or a loss of viability to the population or species.
- WIFV*** Will impact individuals or habitat with a consequence that the action may contribute to a trend towards federal listing or cause a loss of viability to the population or species (trigger for a significant action as defined in NEPA).
- BI** Beneficial impact.

USDA-FS REGION 2 SENSITIVE AND MANAGEMENT INDICATOR SPECIES

Species that have been identified by the Regional Forester as sensitive species and management indicator species must be considered for the selected tracts that include Forest System Lands, administered by the U.S. Department of Agriculture – Forest Service (USDA-FS). The North Antelope Rochelle Mine East Burn tract is the only tract containing forest service lands. The purpose of this Appendix is to provide information about the potential environmental effects that leasing the tract would have on USDA-FS Region 2 Sensitive wildlife and vegetative species (terrestrial and aquatic) and USDA-FS Thunder Basin National Grassland (TBNG) Forest Plan Management Indicator Species. The wildlife discussion will be presented first, followed by the discussion of the vegetation evaluation. Discussions of the sensitive wildlife and vegetation species are also presented in two reports completed in 2005 and submitted to the USDA-FS. The Biological Evaluation For Powder River Coal Company's North Antelope Rochelle Mine by Gwyn McKee, Thunderbird Wildlife Consulting, Inc. dated October 17, 2005 was reviewed for additional wildlife data and the report Powder River Coal Company North Antelope Rochelle Mine Alluvial Valley Floor Exchange Drilling Area, Biological Evaluation/ Botany, Region 2, Medicine Bow-Rout National Forest, Thunder Basin National Grassland, Douglas Ranger District by Melody Smith, BKS Environmental Associates, Inc. dated July 2005 was utilized for the botany discussion.

USDA-FS Region 2 Sensitive Species

The USDA-FS classifies species as "Sensitive" when they meet one or more of the following three criteria: 1) the species is declining in numbers or occurrences, and evidence indicates it could be proposed for federal listing as threatened or endangered if action is not taken to reverse or stop the downward trend; 2) the species' habitat is declining and continued loss could result in population declines that lead to federal listing as threatened or endangered if action is not taken to reverse or stop the decline; and 3) the species' population or habitat is stable but limited. In addition to these criteria, a ranking system is used to identify species for Sensitive status, which is outlined in USDA-FS Manual 2670-2671. Table D-3 lists species that have been identified as "Sensitive" for USDA-FS Region 2.

The USDA-FS Douglas Ranger District has reviewed the entire list of animal and plant sensitive species for USDA-FS Region 2 and eliminated those species that occur on the TBNG, but are outside of any effects of the proposal (geographically or biologically), from further review. The species listed in Table D-4 will be evaluated for potential effects from the Proposed Actions and alternatives. These species have been identified as potentially inhabiting the project planning area or potentially affected by the Proposed Action.

Habitat And Occurrences On And Near the NARM East Burn Area

Site-specific data on the occurrence of USDA-FS sensitive species on the NARM East Burn tract were obtained from the Wyoming Department of Environmental Quality/Land Quality Division (WDEQ/LQD) permit applications, annual reports for the North Antelope Rochelle Mine, and biological evaluations and assessments conducted in 2005 on the USDS-FS lands within and adjacent to the East Burn tracts. Wildlife surveys have been conducted on the tracts during baseline and annual monitoring surveys which includes the current permit area and a two-mile surrounding area. These studies covered the proposed tract. In addition, the Biological Evaluation For Powder River Coal Company's North Antelope Rochelle Mine by Gwyn McKee, Thunderbird Wildlife Consulting, Inc. dated October 17, 2005 was reviewed for additional wildlife data and the report Powder River Coal Company North Antelope Rochelle Mine Alluvial Valley Floor Exchange Drilling Area, Biological Evaluation/ Botany, Region 2, Medicine Bow-Rout National Forest, Thunder Basin National Grassland, Douglas Ranger District by Melody Smith, BKS Environmental Associates, Inc. dated July 2005 was utilized for the botany discussion.

Table D-3
USDA-FS Region 2 Sensitive Species List
(provided by USDA-FS March, 2005)

ANIMALS

MAMMALS

<i>Conepatus leuconotus</i>	common hog-nosed skunk
<i>Cynomys gunnisoni</i>	Gunnison's prairie dog
<i>Cynomys leucurus</i>	white-tailed prairie dog
<i>Cynomys ludovicianus</i>	black-tailed prairie dog
<i>Euderma maculatum</i>	spotted bat
<i>Gulo gulo</i> wolverine	
<i>Lontra canadensis</i>	river otter
<i>Martes americana</i>	American marten
<i>Microtus richardsoni</i>	water vole
<i>Myotis thysanodes</i>	fringed myotis
<i>Plecotus townsendii</i>	Townsend's big-eared bat
<i>Sorex hoyi</i> pygmy shrew	
<i>Thomomys clusius</i>	Wyoming pocket gopher
<i>Vulpes macrotis</i>	kit fox
<i>Vulpes velox</i> swift fox	

BIRDS

<i>Accipiter gentilis</i>	northern goshawk
<i>Aegolius funereus</i>	boreal owl
<i>Aimophila cassinii</i>	Cassin's sparrow
<i>Ammodramus savannarum</i>	grasshopper sparrow
<i>Amphispiza belli</i>	sage sparrow
<i>Asio flammeus</i>	short-eared owl
<i>Athene cunicularia</i>	burrowing owl
<i>Botaurus lentiginosus</i>	American bittern
<i>Buteo regalis</i>	ferruginous hawk
<i>Calcarius mccownii</i>	McCown's longspur
<i>Calcarius ornatus</i>	chestnut-collared longspur
<i>Centrocercus minimus</i>	Gunnison sage-grouse
<i>Centrocercus urophasianus</i>	greater sage-grouse
<i>Charadrius montanus</i>	mountain plover
<i>Chlidonias niger</i>	black tern
<i>Circus cyaneus</i>	northern harrier
<i>Coccyzus americanus</i>	yellow-billed cuckoo
<i>Contopus cooperi</i>	olive-sided flycatcher
<i>Cygnus buccinator</i>	trumpeter swan
<i>Cypseloides niger</i>	black swift
<i>Falco peregrinus anatum</i>	American peregrine falcon
<i>Histrionicus histrionicus</i>	harlequin duck

Table D-3 (cont.)

ANIMALS

BIRDS (cont.)

<i>Lagopus leucurus</i>	white-tailed ptarmigan
<i>Lanius ludovicianus</i>	loggerhead shrike
<i>Melanerpes lewis</i>	Lewis' woodpecker
<i>Numenius americanus</i>	long-billed curlew
<i>Otus flammeolus</i>	flammulated owl
<i>Picoides arcticus</i>	black-backed woodpecker
<i>Picoides dorsalis</i>	American three-toed woodpecker
<i>Progne subis</i>	purple martin
<i>Spizella breweri</i>	Brewer's sparrow
<i>Pediocetes phasianellus columbianus</i>	Columbian sharp-tailed grouse
<i>Tympanuchus cupido</i>	greater prairie-chicken
<i>Tympanuchus pallidicinctus</i>	lesser prairie-chicken

AMPHIBIANS

<i>Bufo boreas boreas</i>	boreal toad
<i>Rana blairi</i> Plains leopard frog	
<i>Rana luteiventris</i>	Columbia spotted frog
<i>Rana pipiens</i>	northern leopard frog
<i>Rana sylvatica</i>	wood frog

FISHES

<i>Catostomus discobolus</i>	bluehead sucker
<i>Catostomus latipinnis</i>	flannelmouth sucker
<i>Catostomus platyrhynchus</i>	mountain sucker
<i>Catostomus plebeius</i>	Rio Grande sucker
<i>Couesius plumbeus</i>	lake chub
<i>Gila pandora</i>	Rio Grande chub
<i>Gila robusta</i> roundtail chub	
<i>Hybognathus placitus</i>	Plains minnow
<i>Macrhybopsis gelida</i>	sturgeon chub
<i>Margariscus margarita</i>	pearl dace
<i>Nocomis biguttatus</i>	hornyhead chub
<i>Oncorhynchus clarki pleuriticus</i>	Colorado River cutthroat trout
<i>Oncorhynchus clarki virginalis</i>	Rio Grande cutthroat trout
<i>Oncorhynchus clarki bouvieri</i>	Yellowstone cutthroat trout
<i>Phoxinus eos</i>	northern redbelly dace
<i>Phoxinus erythrogaster</i>	southern redbelly dace
<i>Phoxinus neogaeus</i>	finescale dace
<i>Platygobio gracilis</i>	flathead chub

Table D-3 (cont.)

ANIMALS

REPTILES

<i>Sistrurus catenatus</i>	massasauga
<i>Storeria occipitomaculata pahasapae</i>	Black Hills redbelly snake

INSECTS

<i>Hesperia ottoe</i>	Ottoe skipper
<i>Somatochlora hudsonica</i>	Hudsonian emerald
<i>Speyeria idalia</i>	regal fritillary
<i>Speyeria nokomis nokomis</i>	Nokomis fritillary, or Great Basin silverspot

MOLLUSCS

<i>Acroloxus coloradensis</i>	Rocky Mountain capshell
<i>Oreohelix strigosa cooperi</i>	Cooper's Rocky Mountain snail

PLANTS

MONOCOTS

<i>Amerorchis rotundifolia</i>
<i>Calochortus flexuosus</i>
<i>Carex alopecoidea</i>
<i>Carex diandra</i>
<i>Carex livida</i>
<i>Cypripedium montanum</i>
<i>Cypripedium parviflorum</i>
<i>Eleocharis elliptica</i>
<i>Epipactis gigantea</i>
<i>Eriophorum altaicum</i> var. <i>neogaeum</i>
<i>Eriophorum chamissonis</i>
<i>Eriophorum gracile</i>
<i>Festuca campestris</i>
<i>Festuca hallii</i>
<i>Kobresia simpliciuscula</i>
<i>Liparis loeselii</i>
<i>Malaxis brachypoda</i>
<i>Platanthera orbiculata</i>
<i>Ptilagrostis porteri</i>
<i>Schoenoplectus hallii</i>
<i>Triteleia grandiflora</i>

Table D-3 (cont.)

PLANTS

FERNS & ALLIES

Botrychium campestre
Botrychium lineare
Botrychium multifidum
Dryopteris carthusiana
Lycopodium complanatum
Selaginella selaginoides

DICOTS

Aquilegia chrysantha var. *rydbergii*
Aquilegia laramiensis
Armeria maritima ssp. *sibirica*
Asclepias uncialis
Astragalus barrii
Astragalus leptaleus
Astragalus missouriensis var. *humistratus*
Astragalus proximus
Astragalus ripleyi
Astragalus wetherillii
Braya glabella
Chenopodium cycloides
Cirsium perplexans
Descurainia torulosa
Draba exunguiculata
Draba grayana
Draba smithii
Drosera anglica
Drosera rotundifolia
Eriogonum brandegeei
Eriogonum exilifolium
Eriogonum visher
Gilia sedifolia
Ipomopsis aggregata ssp. *weberi*
Ipomopsis globularis
Ipomopsis polyantha
Lesquerella fremontii
Lesquerella pruinosa
Machaeranthera coloradoensis
Mimulus gemmiparus
Neoparrya lithophila
Oreoxis humilis
Oenothera harringtonii

Table D-3 (cont.)

PLANTS

FERNS & ALLIES

Parnassia kotzebuei
Penstemon absarokensis
Penstemon caryi
Penstemon degeneri
Penstemon harringtonii
Penstemon jamesii
Penstemon laricifolius ssp. *exilifolius*
Phacelia scopulina var. *submutica*
Physaria didymocarpa var. *lanata*
Potentilla rupincola
Primula egaliksensis
Pyrrocoma carthamoides var. *subsquarrosa*
Pyrrocoma clementis var. *villosa*
Pyrrocoma integrifolia
Ranunculus karelinii
Rubus arcticus ssp. *acaulis*
Salix arizonica
Salix barrattiana
Salix candida
Salix myrtilifolia
Salix serissima
Sanguinaria canadensis
Shoshonea pulvinata
Thalictrum heliophilum
Townsendia condensata var. *anomala*
Utricularia minor
Viburnum opulus var. *americanum*
Viola selkirkii

Table D-4
USDA-FS Region 2 Listed Sensitive Species That May Occur in
or be Impacted by Leasing the NARM East Burn Tracts
(provided by USDA-FS March, 2005)

ANIMALS

MAMMALS

<i>Cynomys ludovicianus</i>	black-tailed prairie dog
<i>Myotis thysanodes</i>	fringed myotis
<i>Plecotus townsendii</i>	Townsend's big-eared bat
<i>Vulpes velox</i>	swift fox

BIRDS

<i>Ammodramus savannarum</i>	grasshopper sparrow
<i>Amphispiza belli</i>	sage sparrow
<i>Asio flammeus</i>	short-eared owl
<i>Athene cunicularia</i>	burrowing owl
<i>Buteo regalis</i>	ferruginous hawk
<i>Calcarius mccownii</i>	McCown's longspur
<i>Calcarius ornatus</i>	chestnut-collared longspur
<i>Centrocercus urophasianus</i>	greater sage-grouse
<i>Charadrius montanus</i>	mountain plover
<i>Circus cyaneus</i>	northern harrier
<i>Coccyzus americanus</i>	yellow-billed cuckoo
<i>Lanius ludovicianus</i>	loggerhead shrike
<i>Melanerpes lewis</i>	Lewis' woodpecker
<i>Numenius americanus</i>	long-billed curlew
<i>Spizella breweri</i>	Brewer's sparrow

AMPHIBIANS

<i>Rana pipiens</i>	northern leopard frog
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FERNS & ALLIES

<i>Botrychium campestre</i>

MONOCOTS

<i>Carex alopecoidea</i>

DICOTS

<i>Astragalus barrii</i>
<i>Eriogonum visheri</i>
<i>Penstemon laricifolius</i> ssp. <i>exilifolius</i>
<i>Physaria didymocarpa</i> var. <i>lanata</i>
<i>Viburnum opulus</i> var. <i>americanum</i>

No fish species were included on the USDA-FS list of sensitive species for tracts.

Small portions of two prairie dog colonies adjacent to the East Burn tract extend onto the tract. One colony is located in the SW¼ of section 18 and another in the E½ of section 19 of T42N, R69W.

Habitats in the vicinity of the East Burn tracts are marginal (relatively dense sagebrush stands) for the swift fox. Sightings are rare in southern Campbell County. The species has only been documented once by TWC biologists during 22 years of wildlife studies at coal mines in the Powder River Basin (PRB). On the night of March 27, 2002, one swift fox was observed trotting beside the relocated Reno County Road in SW¼ SE¼ of Section 15, T42N, R70W. The USDA-FS has also documented the swift fox in this general area. They have documented swift fox presence through either direct observation and/or through the presence of tracks left on survey tracking plates. The USDA-FS conducted focused surveys in this general area throughout the mid- to late-1990s. Swift fox presence has been documented at several locations near the East Burn tracts, in Sections 9, 14, and 22 of T43N, R71W. Additional locations have been documented west of the tracts, south of Wright, Wyoming.

Burrowing owls have nested in the area, but no nests have been documented on the East Burn tracts. Although only small areas prairie dog colonies exist on the tract, owls could potentially nest in badger burrows.

There is one intact ferruginous hawk nest located on the southern most portion of the East Burn tracts and others are located within two miles. There are scattered nesting sites for the loggerhead shrike on the NARM permit area. Upland sandpipers are relatively uncommon in the North Antelope/Rochelle Complex area but suitable habitat is abundant. Long-billed curlews have only been documented a few times in the area and suitable habitat is quite limited.

Direct And Indirect Effects On USDA-FS Sensitive Species

The following discussion is an evaluation of the potential direct and indirect environmental effects on USDA-FS Region 2 Sensitive Species identified as potentially inhabiting the USDA-FS lands on the East Burn tracts.

Leasing and mining the East Burn tracts is not expected to impact any of the Region 2 sensitive fish species. The USDA-FS lands included in this tract that would be disturbed do not support fisheries under natural conditions. Produced water from CBM wells could temporarily increase aquatic habitat for fish in this area. Leasing and mining are not expected to impact either the black-tailed prairie dog or swift fox. Only small areas of adjacent black-tailed prairie dog

colonies are located on the northern portion of the East Burn tract, and swift fox do not appear to inhabit the lease area.

Mining and associated activities have the potential to destroy nests and impact the reproductive success of ferruginous hawks and other raptors nesting in the area. However, PRCC has been diligent about avoiding and mitigating such impacts in the past through a variety of means. PRCC has monitored nesting raptor populations, maintained and implemented current U.S. Fish and Wildlife Service (USFWS) approved Raptor Mitigation Plans, adjusted operations to provide temporal and spatial buffers around raptor nests, and ensured that new power transmission lines at the mine conform to the Avian Powerline Interaction Commission guidelines (EEI/RRF 1996). Direct effects to ferruginous hawks and other raptors may occur if any nests are destroyed or moved; however, the established practices discussed above will reduce the impacts of these actions. Indirect impacts, such as the temporary loss of foraging habitat during active mining, are not expected to negatively affect the survival or reproductive success of any hawks.

Disturbance of habitats during mining could impact individual burrowing owls, loggerhead shrikes, and upland sandpipers, but is not likely to cause a trend to federal listing or loss of viability. PRCC can avoid direct impacts to burrowing owls by continuing to monitor nesting raptor populations, maintaining and implementing current USFWS approved Raptor Mitigation Plans, and taking precautions to provide adequate temporal and spatial buffers around nests. Assuming active shrike nests are not removed during the breeding season, direct impacts on that species should be minimal. Suitable sandpiper habitat exists on the tracts that could be eliminated by mining but direct impacts to individuals are unlikely. Given the paucity of past observations and the marginal habitats available in the area, impacts to the long-billed curlew are unlikely.

Mining the East Burn tracts, if it is leased under the Proposed Action may impact individuals but is not likely to result in the loss of viability on the USDA-FS Planning Area or cause a trend toward federal listing of loss of species viability range-wide for any of the USDA-FS Sensitive Species.

Cumulative Effects Regarding USDA-FS Sensitive Species

Through 2005, the lands included in the East Burn tracts have been used primarily for agricultural livestock grazing and hunting. In addition to the proposed project, future activities are likely to include: CBM gas exploration and development; hunting (possibly); livestock grazing; and eventual surface coal mining and reclamation with native plant species.

This general area is experiencing a development boom associated with CBM development operations. This development is at a landscape level. Surface coal mining tends to have more intense impacts on fairly localized areas, while oil and gas development tends to be less intensive but spread over a larger area. Impacts of oil and gas development and coal mining for some resources, such as groundwater and air quality, tend to be overlapping. Cumulative impacts to wildlife are primarily in the form of habitat disturbance. Both oil and gas development and mining activities have requirements for reclamation of disturbed areas as resources are depleted; however, the net area of energy disturbance in the Wyoming PRB has been increasing. In the short term, this means a reduction in the available habitat for sensitive species. In the long term, habitat will be gradually restored as reclamation proceeds.

No critical habitat for any USDA-FS Sensitive Species has been delineated in the East Burn tracts. Any losses that do occur will eventually be mitigated for most species by reclamation with native seed mixes, which may improve habitat quality by reducing the presence of non-native plants (e.g., crested wheatgrass) in the tracts. Leasing the East Burn tracts will not conflict with the current Forest Plan, or any future objectives to manage the area and provide habitat for Sensitive Species.

Mitigation

Mitigation measures designed to reduce impacts to wildlife that are required by the Surface Mining Control and Reclamation Act and state law. They include:

- using raptor-safe power lines;
- designing fences to permit wildlife passage;
- creating artificial raptor nest sites;
- relocating raptor nests and taking other actions to maintain active nesting pairs;
- restoring premining topography to the maximum extent possible;
- planting a diverse mixture of grasses, forbs, and shrubs in configurations beneficial to wildlife; and
- building and maintaining sediment control ponds or other sediment control devices during mining.

Monitoring

Wildlife monitoring has been and will be conducted annually by the North Antelope Rochelle Mine as part of the requirements of their existing mining and reclamation permits. The permit will be amended to include the East Burn areas if the tracts are leased as proposed under the Proposed Action.

USDA-FS Management Indicator Species

As part of the development of the *Land and Resource Management Plan for the TBNG* (USDA-FS 2001a), the USDA-FS identified Management Indicator Species (MIS) using seven criteria, which are listed in Appendix B of the *Final EIS for the Northern Great Plains Management Plans Revision for the TBNG* (USDA-FS 2001b). MIS are “plant or animal species selected because their population changes are believed to indicate the effects of management activities on other species of selected major biological communities or on water quality”. Currently, no plants, fish, or invertebrates are listed as MIS for the TBNG.

Table 3-128 of the *Final EIS for the Northern Great Plains Management Plans Revision for the TBNG* (USDA-FS 2001b) lists three MIS species that were selected by the USDA-FS for the TBNG. These three species are sage grouse, black-tailed prairie dog, and plains sharp-tailed grouse.

Appropriate year-round habitat for the plains sharp-tailed grouse is not available in the vicinity of the East Burn tracts. Sharp-tailed grouse have occasionally been observed in the general area, but not on the tracts.

Sage grouse monitoring has occurred within the area since 1967. The overall indication is a decreasing population trend. Sage grouse generally do not respond positively to human activities and disturbances. The decline in sage grouse across its range has been attributed, in part, to loss in habitat and increased human disturbances during critical periods of its life cycle. These periods include breeding, nesting, and in some cases during stressful periods due to winter conditions.

There are currently no active sage grouse leks on the East Burn tracts. The nearest lek to the East Burn tracts is the Kort Lek (SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 31, T42N, R69W). That lek was discovered in 1998 when 11 males were observed. No grouse were observed in the Kort Lek in 2005. Additional discussion of sage grouse leks in the general area of the mine are presented in The Biological Evaluation for the Powder River Coal Company North Antelope Rochelle Mine, prepared by Thunderbird Wildlife Consulting, Inc., dated October 17, 2005 and submitted to the Douglas Ranger District Office in Douglas Wyoming.

Because of its location in a current mining lease, the Kort Lek will be affected by mining activity before the East Burn tracts will be impacted. Potential impacts include: the destruction of active nests during topsoil removal, mortalities caused by additional vehicle traffic, and displacement of grouse from their core home range. Collectively, those factors could diminish the survival and reproductive success of grouse, resulting in a decline of the Rochelle sage grouse population. If precautions are taken to avoid direct mortalities and disturbances to nests and leks during the breeding season, grouse will have the opportunity to disperse away from mine activities.

The range of sagebrush density and height within the tract represents potential year-round habitat for sage grouse. Consequently, development of those tracts could potentially affect grouse through habitat disturbance and degradation. Mining could potentially eliminate all suitable habitat within the lease areas. Although sagebrush is seeded on reclaimed lands, the low recruitment and slow growth rate of sagebrush will render those areas unsuitable for grouse for at least several decades. The construction of new powerlines could diminish the value of otherwise suitable habitats by providing additional perching opportunities for golden eagles (*Aquila chrysaetos*) and thus increasing the predation risk to grouse in those areas.

The black-tailed prairie dog is a “candidate” for possible federal listing. According to the *Final EIS Northern Great Plains Management Plans Revision for the TBNG* (USDA-FS 2001b), long-term population trends for black-tailed prairie dogs on the national grasslands are down. Primary threats include habitat loss and deterioration as a result of cultivation, urban sprawl and fragmentation. However, as indicated in the previous discussion of USDA-FS Region 2 Sensitive Species, the TBNG harbors one of the major black-tailed prairie dog colony complexes remaining in North America.

The occurrence of black-tailed prairie dogs on the East Burn tracts was discussed in the previous section on USDA-FS Region 2 Sensitive Species.

The sage grouse and black-tailed prairie dog would be monitored as part of the ongoing mining activities if these tracts are leased and incorporated into a mining and reclamation plan.

USDA-FS Management Indicator Botany Species

Sensitive Species Considered In The Analysis

Sensitive species, or their habitats, located on the Douglas Ranger District of the Medicine Bow-Routt National Forest, TBNG, or located adjacent to or downstream of the project and could potentially be affected were considered in this analysis. The 2003 MBRTB Sensitive Plant Species List identified the species listed in Table D-5 as 2003 R2 List species of documented or suspected occurrence on the TBNG.

A pre-field review was conducted of available information to assemble occurrence records, describe habitat needs and ecological requirements, and determine whether field reconnaissance was needed to complete the analysis for R2 List species with documented or suspected occurrence on the TBNG. The potential for occurrence for these species was evaluated. Sources of local and regional information included USFS records and files (provided by Kurt Staton, Rangeland Management Specialist, Douglas Ranger District), the WYNDD, vegetation data collected at nearby coal mines, and current, available scientific literature. The 2003 USFS R2 Sensitive Species List (2672.11 R2 FSM Supplement No. 2600-2003-1, Exhibit 01) and the Powder River Basin EIS (2003) were also reviewed.

No further analysis was required for species that are not known or suspected to occur in the project area, or for which no suitable habitat is present. Of the eight sensitive species requiring evaluation, seven of the species are not known to occur within the project area, within the county, or within surrounding counties, and suitable habitat was absent within the project area. *Botrychium campestre* (prairie moonwort), *Carex alopecoidea* (foxtail sedge), *C. leptalea* (bristly-stalk sedge), *Eriogonum visherii* (Visher's buckwheat), *Penstemon laricifolius* var. *exilifolius* (larchleaf beardtongue), *Physaria didymocarpa* var. *lanata* (woolly twinpod), and *Viburnum opulus* var. *americanum* (highbush cranberry) were excluded from further analysis based on a lack of habitat. A habitat survey was conducted for *Astragalus barrii* (Barr's milkvetch). Table D-5 summarizes the rationale for analysis of each of the eight listed species. Table D-6 presents a summary of sensitive species habitat requirements and survey area habitat limitations.

Table D-5
Summary of, and Analysis Rationale for, USFS Sensitive Species
Potentially Occurring on TBNG

Common Name	Scientific Name	Status	Known/suspected to be present?	Suitable habitat present?	Rationale if not carried forward for analysis.
Barr's Milkvetch	<i>Astragalus barrii</i>	Sensitive Species	Documented	Yes	
Prairie Moonwort	<i>Botrychium campestre</i>	Sensitive Species	Suspected	No	Not known to occur in Weston, Campbell, or Converse counties. Local habitat confirmed unsuitable on 2/11/05.
Foxtail Sedge	<i>Carex alopecoidea</i>	Sensitive Species	Suspected	No	Not known to occur in Weston, Campbell, or Converse counties. Local habitat confirmed unsuitable on 2/11/05.
Bristly-Stalk Sedge	<i>Carex leptalea</i>	Sensitive Species	Suspected	No	Not known to occur in Weston, Campbell, or Converse counties. Local habitat confirmed unsuitable on 2/11/05.
Visher's buckwheat	<i>Eriogonum visherii</i>	Sensitive Species	Suspected	No	Not known to occur in Weston, Campbell, or Converse counties. Local habitat confirmed unsuitable on 2/11/05.
Larchleaf beardtongue	<i>Penstemon laricifolius</i> var. <i>exillifolius</i>	Sensitive Species	Suspected	No	Not known to occur in Weston, Campbell, or Converse counties. Local habitat confirmed unsuitable on 2/11/05.
Woolly Twinpod	<i>Physaria didymocarpa</i> var. <i>lanata</i>	Sensitive Species	Suspected	No	Not known to occur in Weston, Campbell, or Converse counties. Local habitat confirmed unsuitable on 2/11/05.
Highbush-cranberry	<i>Viburnum opulus</i> var. <i>americanum</i>	Sensitive Species	Suspected	No	Not known to occur in Weston, Campbell, or Converse counties. Local habitat confirmed unsuitable on 2/11/05.

**Table D-6
USFS Sensitive Species Habitat Summary**

Species	Elevation (ft)	Habitat Requirements	Associated Species	Nearest County with Known Population Occurrence	Project Area Habitat Limitations
<i>Astragalus barrii</i> (Barr's milkvetch)	3600-5700	Dry, sparsely vegetated rocky prairie high points on soft shale, siltstone or sandstone (Breaks vegetation community type)	ELYLAN, MUSDIV, STEACA, HYMRIC, MACGRI	Campbell	No limitations in areas of potential habitat. Some Breaks areas consisted of scoria, sandy soils or clay soils in areas of small barren clay/shale outcrops that was not considered potential habitat. The majority of area was too mesic, supporting a higher percentage of vegetation cover than that tolerated by Barr's milkvetch.
<i>Botrychium campestre</i> (prairie moonwort)	3700-10800	Prairies, dunes and fields over limestone	Ponderosa pine, sandy soils	Crook - Black Hills	No habitat or associated species present. No dunes or fields and not over limestone substrate.
<i>Carex alopecoidea</i> (foxtail sedge)	5600-5900	Wet meadows and streamside willow-sedge communities	Paper birch-hazelnut communities or along pond margins	Crook - Black Hills	No habitat or associated species present. Lack of adequate moisture regime, elevation < 5600'.
<i>Carex leptalea</i> (bristly-stalk sedge)	6500-8120	Mountain swamps	White or Engelmann spruce swamp forests or CARROS/CARAQU and CARBUX swamps	Park, Teton, Yellowstone	No habitat or associated species present. Lack of adequate moisture regime, elevation < 6500'.
<i>Eriogonum visherii</i> (Visher's buckwheat)	1900-3100	Gullied ridges and eroded badland hills, barren shale and clay outcrops, at least 50% bare soil, high salt, shrink/swell clay. Badlands islands in grassland matrix.	Not Known at this time	MT, ND, SD, none in WY	No habitat present. Elevation > 3100'. Vegetation cover competition generally too high. Note: portions of the Breaks provided small inclusions of barren clay/shale outcrops, but were not considered potential habitat.
<i>Penstemon laricifolius</i> var. <i>exillifolius</i> (larchleaf beardtongue)	6300-7800	Rocky slopes, well-drained gritty soil	Sagebrush/limber pine	Big Horn, Niobrara, Natrona	No habitat or associated species present. Elevation < 6300', no limber pine present.
<i>Physaria didymocarpa</i> var. <i>lanata</i> (woolly twinpod)	3600-9680	Big Horn Mountains and northern Powder River Basin, redbed clay-shale outcrops, roadcuts, other exposed rock-cliff substrates	Not known at this time	Sheridan, Johnson	No habitat present. Lack of rock cliffs.
<i>Viburnum opulus</i> var. <i>americanum</i> (highbush cranberry)	Not available	Moist, wooded hillsides, thickets or low woodlands	Paper birch	Sheridan, Crook	No habitat or associated species present. Lack of adequate moisture regime and associated woodlands. Woodlands absent.

Analysis Of Effects – USDA-FS Sensitive Species

Barr’s Milkvelch (*Astragalus barrii*)

According to the WYNDD information (Bonnie Heidel, 2003), Barr’s milkvelch is a regional endemic of the Great Plains in southeastern Montana, northeastern Wyoming, southwestern South Dakota, and northwestern Nebraska. In Wyoming, the species is found in Campbell, Converse, Johnson, Natrona, Niobrara, Sheridan, and Washakie counties. Habitat is found primarily on dry, sparsely vegetated rocky prairie breaks, knolls, hillsides, and ridges on calcareous soft shale and siltstone, or silty sandstone. It is restricted to upper- and mid-slope topographic positions, often on north and east-facing aspects at elevations ranging from 3600 – 5700 feet. Species Barr’s milkvelch is typically associated with include; thickspike wheatgrass, leafy musineon, *Stenotus acaulis* (matted goldenweed), *Hymenoxys richardsonii* (pingue actinea), and spiny aster (Heidel, 2003).

The USFS currently lists Barr’s milkvelch as a sensitive species. Current trends indicate that populations are stable, though they may decline under drought conditions. Threats to populations appear to occur in the form of coal mine expansion, off-road recreation, road development, and the spread of non-native species (WYNDD, 2003).

CREDENTIALS OF SURVEY PERSONNEL

Thunderbird Wildlife Consulting, Inc. of Gillette, Wyoming

Gwyn McKee

Ms. McKee obtained a Master of Science degree in Wildlife Ecology from the University of Missouri-Columbia. She has accumulated more than 20 years of professional experience, with the last nine in Wyoming. Ms. McKee has skills that include planning and conducting surveys for a variety of terrestrial and aquatic species, summarizing data, and preparing technical reports for private, state, and federal agencies. Ms. McKee is considered qualified by all state and federal agencies to conduct T&E and other wildlife surveys within the region. Those qualifications include surveys for mountain plovers and their habitat, and certification by the FWS to conduct black-footed ferret surveys.

Kort M. Clayton

Mr. Clayton earned a Masters of Science degree in Biology from the University of Saskatchewan. He has been professionally involved with wildlife issues in the Northern Great Plains for over 14 years. Since 1998, Mr. Clayton has focused on wildlife inventories, clearances, impact analysis, mitigation, and applied research related to energy developments in the PRB of Wyoming and Montana. Those experiences include surveys for most vertebrate taxa in the region, sage grouse research, raptor mitigation projects, and clearance surveys for several federally listed species.

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