

APPENDIX J

**BIOLOGICAL ASSESSMENT
FOR THE WEST ANTELOPE LBA TRACT
SOUTH POWDER RIVER BASIN COAL EIS**

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J-1.0 INTRODUCTION

In 2000, operators of four coal mines in Campbell and Converse Counties, Wyoming applied to lease five tracts of federal coal as maintenance leases under the Leasing on Application regulations at 43 CFR 3425. The environmental impacts of leasing these five Lease by Application (LBA) tracts are being evaluated in one environmental impact statement (EIS), the South Powder River Basin (SPRB) Coal EIS. The five tracts, which are shown in Figure J-1, and applicant mines are:

- NARO North LBA Tract adjacent to and north of the North Antelope/Rochelle Complex;
- NARO South LBA Tract adjacent to and south of the North Antelope/Rochelle Complex;
- Little Thunder LBA Tract adjacent to and west of the Black Thunder Mine;
- West Roundup LBA Tract adjacent to and southwest of the North Rochelle Mine; and
- West Antelope LBA Tract adjacent to and west of the Antelope Mine.

The purpose of this Biological Assessment is to provide information about the potential environmental effects that leasing one of the tracts, the West Antelope LBA Tract, 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, 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 and Action Alternatives of the Bureau of Land Management (BLM) and the U.S. Department of Agriculture-Forest Service (USDA-FS). It was prepared in accordance with Section 7 of the ESA.

Biological Assessment objectives are:

1. To comply with the requirements of the ESA that actions of federal agencies not jeopardize or adversely modify critical habitat of federally listed species.

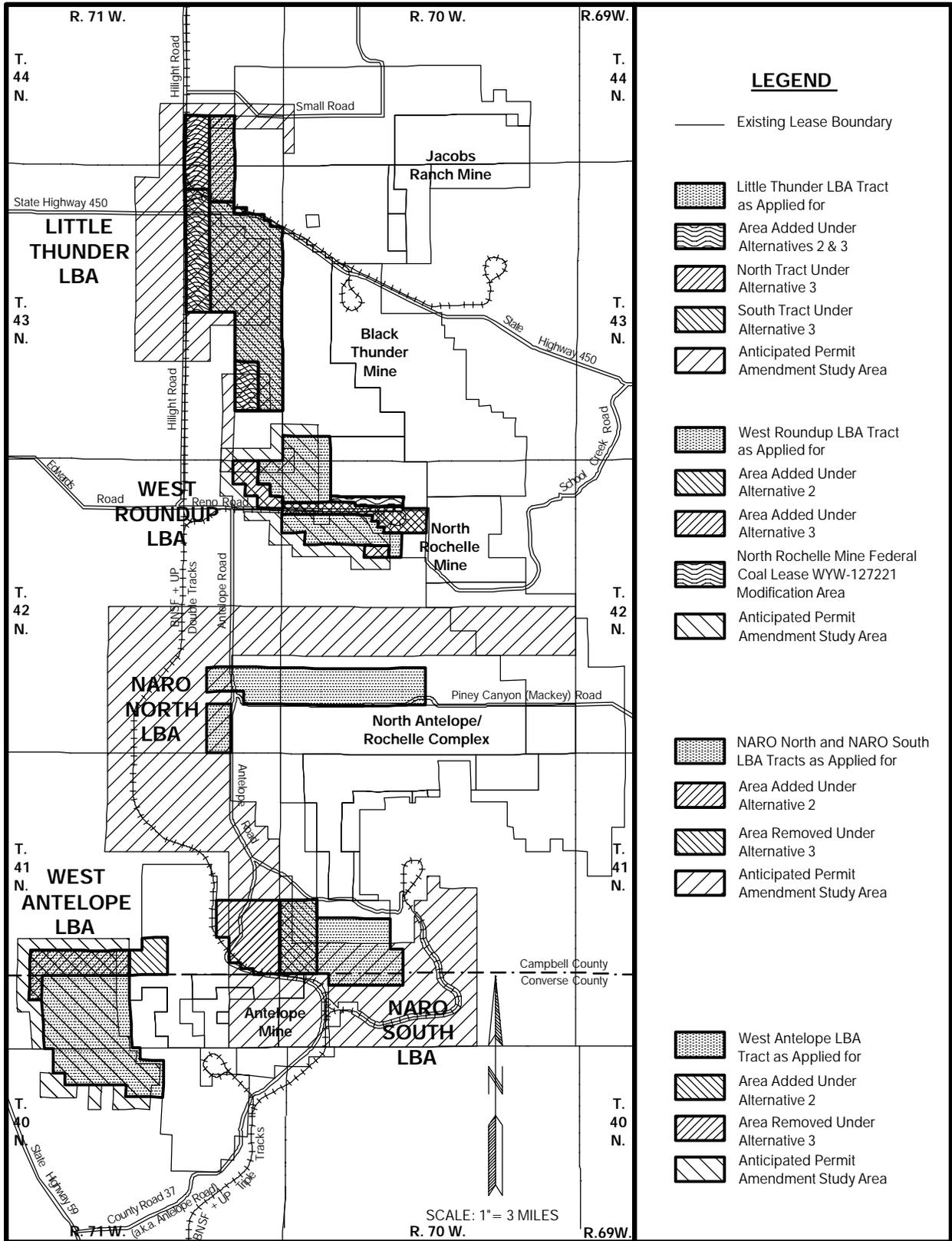


Figure J-1. General Analysis Area for the SPRB Coal EIS.

2. To provide a process and standard by which to ensure that threatened, endangered, and proposed species receive full consideration in the decision making process.

J-2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

J-2.1 The Proposed Action

On September 12, 2000, Antelope Coal Company (ACC) filed an application with the BLM to lease federal coal reserves in a tract located west of and immediately adjacent to the Antelope Mine. Under the Proposed Action for the West Antelope LBA Tract, the tract as applied for by ACC would be offered for lease at a separate, sealed-bid, competitive lease sale. The boundaries of the tract would be consistent with the tract configuration proposed in the West Antelope LBA Tract lease application (Figure J-2). The Proposed Action assumes that ACC will be the successful bidder on the West Antelope LBA Tract if it is offered for sale.

The legal description of the proposed West Antelope LBA Tract as applied for by ACC under the Proposed Action is as follows:

T.40N., R.71W., 6th P.M., Converse County, Wyoming

	<u>Acres</u>
Section 3: Lots 15 through 18;	159.78
Section 4: Lots 5 through 20;	487.25
Section 5: Lots 5 through 7, 10 through 15, 19, and 20;	320.84
Section 9: Lot 1;	40.14
Section 10: Lots 3 and 4;	80.65

T.41N., R.71W., 6th P.M., Converse and Campbell Counties, Wyoming

	<u>Acres</u>
Section 28: Lots 1 through 16;	649.21
Section 29: Lots 1 through 16;	659.81
Section 32: Lots 1 through 3, 6 through 11, 14 through 16;	486.16
Section 33: Lots 1 through 16;	658.35

Total Acreage:	3,542.19
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The coal estate underlying this tract is owned by the federal government and administered by the BLM. The surface estate on this tract is privately owned.

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) (see Section J-3.0 for further discussion). As indicated in Chapter 1, Section 1.4 and Appendix B of this EIS, no lands in the West Antelope LBA Tract were found to be unsuitable for mining. ACC's approved mining plan avoids

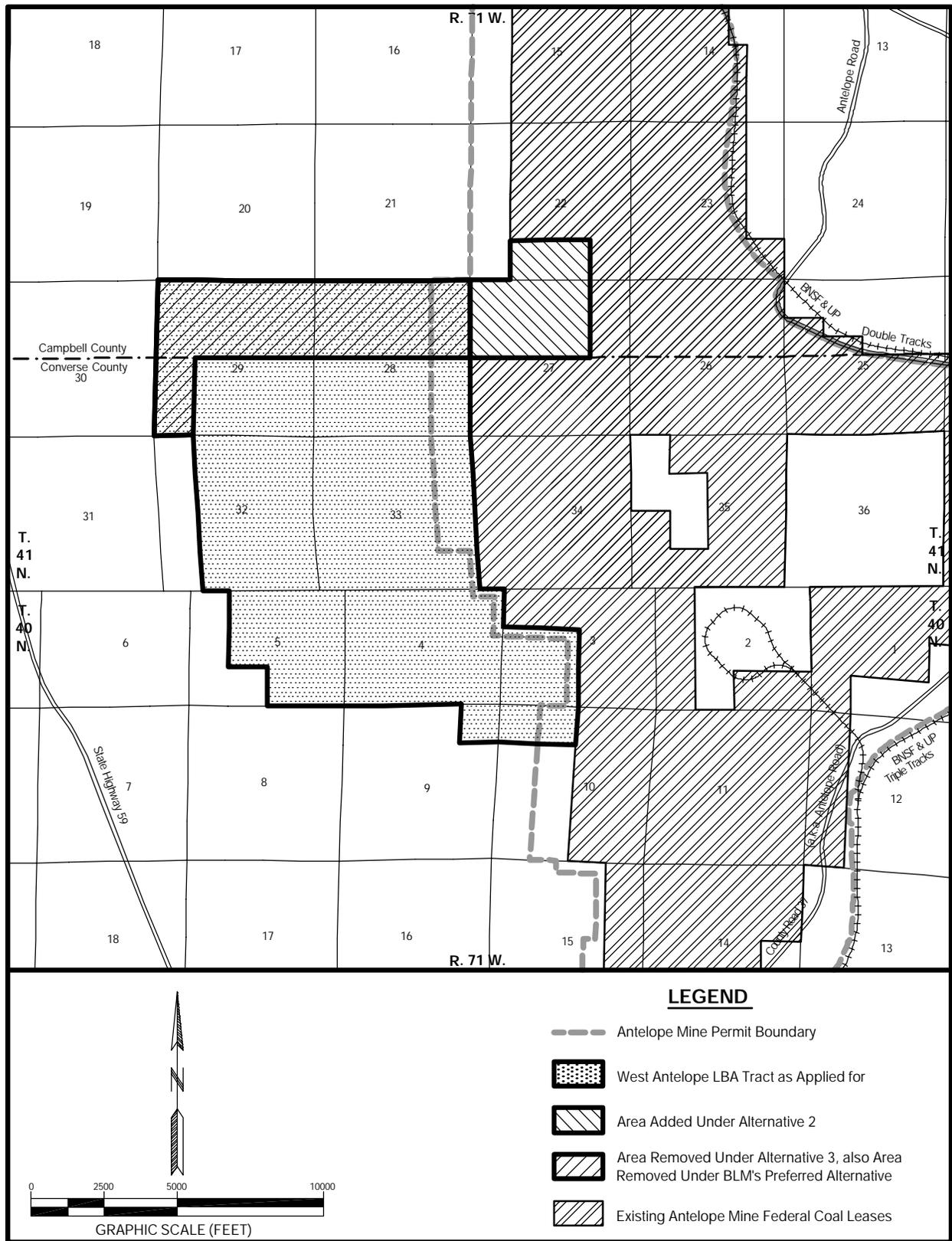


Figure J-2. West Antelope LBA Alternative Tract Configurations.

disturbing Antelope Creek and an adjacent buffer zone, so it is assumed that any coal resources included in the above described lands that are beneath Antelope Creek would not be recovered. ACC estimates that the tract as applied for includes approximately 2,755.16 mineable acres with approximately 293.9 million tons of in-place coal, 245.6 million tons of mineable coal, and that about 228.4 million tons of that coal would be recoverable assuming a recovery factor of 93 percent. 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 construction of flood control and sediment control structures.

Under the Proposed Action for the West Antelope LBA Tract, if a decision is made to hold a competitive lease sale and if there is a successful bidder at that sale, a lease would be issued for the tract of federal coal as applied for. Any tract offered for lease would be subject to standard and special lease stipulations developed for the Wyoming PRB. The stipulations that would be attached to each tract are listed in Appendix D of this EIS.

Under the Proposed Action, it is assumed that the LBA tract would be developed as a maintenance lease to extend the life of the adjacent existing Antelope Mine. As a result, under the Proposed Action, existing facilities, roads, and employees would be used to mine the coal included in the tract.

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 lease.

J-2.2 Alternatives to the Proposed Action

J-2.2.1 Alternative 1

Under the West Antelope LBA Tract Alternative 1, the No Action Alternative, the application to lease the coal included in the West Antelope LBA Tract would be rejected, the tract would not be offered for competitive sale, and the coal included in the tract would not be mined. This would not affect permitted mining activities and employment on the existing leases at the Antelope Mine and would not preclude an application to lease the coal included in the West Antelope LBA Tract in the future. Portions of the surface of the West Antelope LBA Tract could be disturbed due to overstripping to allow coal to be removed from the adjacent existing leases.

J-2.2.2 Alternative 2

Under Alternative 2 for the West Antelope LBA Tract, BLM would reconfigure the tract and hold a competitive coal sale for the lands included in the reconfigured tract. BLM is considering an alternate tract configuration for the

West Antelope LBA Tract in order to avoid creating a potential bypass situation (Figure J-2). Adding the area between the West Antelope LBA Tract as applied for and the existing Horse Creek lease (WYW 141435, issued effective December 1, 2000) would enlarge the original configuration of the West Antelope LBA Tract. The lands that BLM is considering adding to the tract are:

T.41N., R.71W., 6th P.M., Campbell County, Wyoming

	<u>Acres</u>
Section 22: Lots 2 and 16;	85.20
Section 27: Lots 6 through 11;	250.51
Total Acreage:	335.71

The increase to the West Antelope LBA Tract would be 335.71 acres containing approximately 27.9 million tons of in-place coal. The Alternative 2 reconfiguration, therefore, results in a tract comprising approximately 3,877.90 acres containing approximately 321.8 million tons of in-place coal. After eliminating coal that would not be mined beneath Antelope Creek and the adjacent buffer zone, ACC estimates that the reconfigured tract includes approximately 3,091 mineable acres with approximately 273.4 million tons of mineable coal. Using ACC's projected recovery factor of 93 percent, the reconfigured tract would contain about 254.3 million tons of recoverable coal.

J-2.2.3 Alternative 3 (Preferred Alternative)

Under Alternative 3, which is BLM's Preferred Alternative, BLM is considering removing some of the lands applied for in the northern portion of the West Antelope LBA Tract from consideration for leasing at this time and offering a smaller tract for competitive sale (Figure J-2). The coal that BLM is considering removing from the tract as applied for could be combined with the unleased federal coal in this area to create a tract that could potentially have more competitive interest if it is leased in the future.

The legal description of the West Antelope LBA Tract under the BLM's Preferred Alternative is as follows:

T.40N., R.71W., 6th P.M., Converse County, Wyoming

	<u>Acres</u>
Section 3: Lots 15 through 18:	159.78
Section 4: Lots 5 through 20:	487.25
Section 5: Lots 5 through 7, 10 through 15, 19, and 20:	320.84
Section 9: Lot 1:	40.14
Section 10: Lots 3 and 4:	80.65

T.41N., R.71W., 6th P.M., Converse County, Wyoming

	<u>Acres</u>
Section 28: Lots 9 through 16	326.71

Section 29: Lots 9 through 11, 14 through 16	249.25
Section 32: Lots 1 through 3, 6 through 11, 14 through 16	486.16
Section 33: Lots 1 through 16	658.35
Total Acreage:	2,809.13

The Preferred Alternative reconfiguration of the West Antelope LBA Tract, therefore, results in a tract comprising approximately 2,809.13 acres containing approximately 202.3 million tons of in-place coal, according to information provided by the applicant. After eliminating coal that would not be mined beneath Antelope Creek and the adjacent buffer zone, ACC estimates that the reconfigured tract includes approximately 2,022.1 mineable acres with approximately 183.2 million tons of mineable coal. Using ACC's projected recovery factor of 93 percent, the reconfigured tract would contain about 170.4 million tons of recoverable coal.

As under the Proposed Action, if an alternative tract configuration is selected BLM would hold a competitive coal sale and issue a lease to the successful bidder. The modified tract would be subject to standard and special lease stipulations developed for the PRB and the tract if it is offered for sale (Appendix D of this EIS). Alternatives for the West Antelope LBA Tract assume that ACC would be the successful bidder on the tract if a lease sale is held and that the tract would be mined as a maintenance lease for the Antelope Mine. Other assumptions are the same as for the Proposed Action.

J-3.0 CONSULTATION TO DATE

The location of the existing Antelope Mine coal leases, the existing approved mine permit area, and the West Antelope LBA Tract are shown in Figure J-3.

The Antelope Mine and West Antelope LBA Tract 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 and listed in Appendix B of this EIS. The coal unsuitability criteria were applied to federal coal lands in Campbell and Converse Counties in the early 1980s by the BLM and USDA-FS. The West Antelope LBA Tract is located in the area covered by the USDA-FS screening analysis published as Appendix F of the 1985 *Thunder Basin National Grassland Land and Resource Management Plan*. Consultation with the U.S. Fish and Wildlife Service (USFWS) 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, USDA-FS, and USFWS began the process of

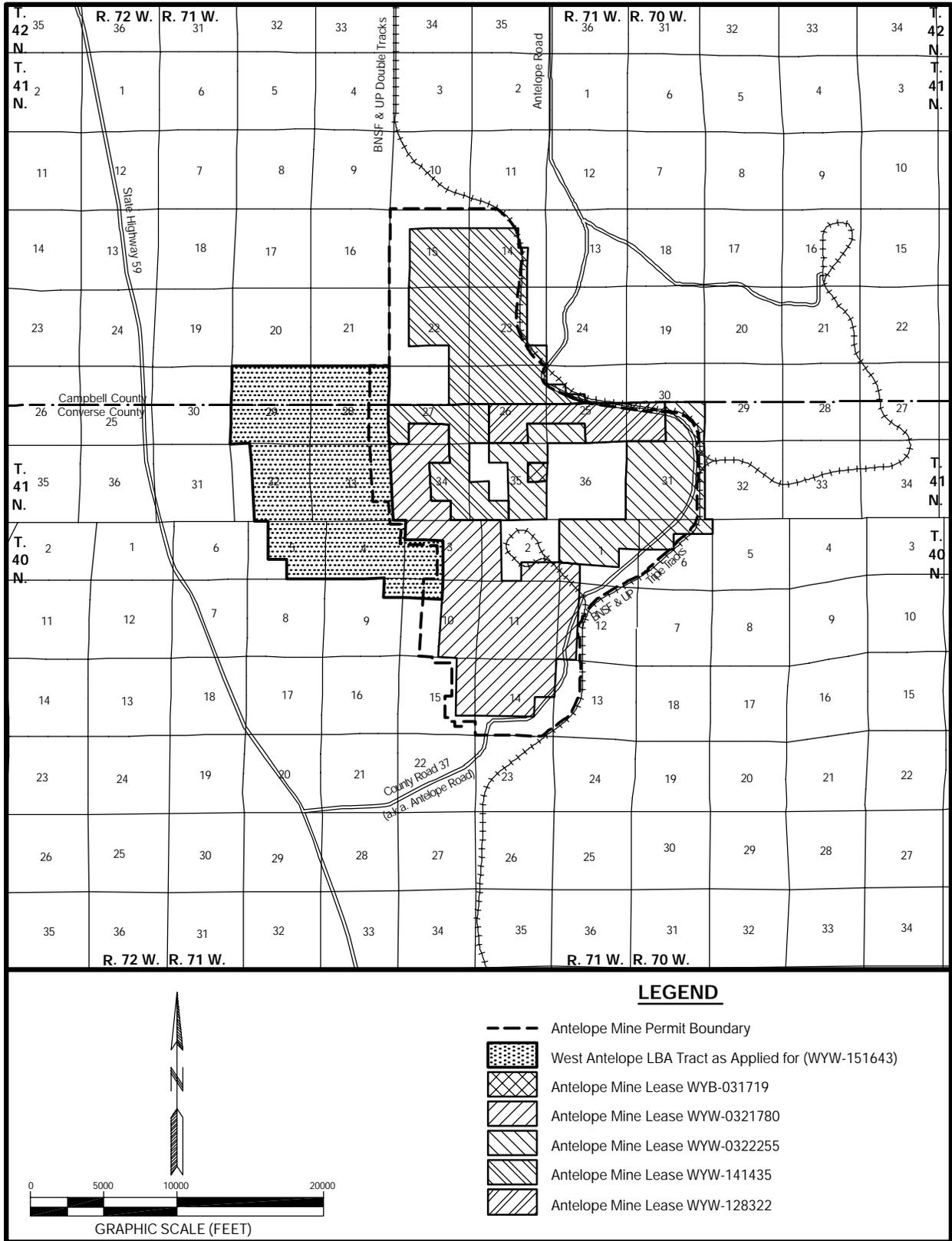


Figure J-3. Antelope Mine Federal Coal Leases and West Antelope LBA Tract as Applied for.

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*. This analysis is referenced in the *Final Environmental Impact Statement (FEIS) for the Northern Great Plains Management Plans Revision* (USDA-FS 2001a) and adopted in the *Land and Resource Management Plan (LRMP) for the Thunder Basin National Grassland* (USDA-FS 2001b). The Record of Decision for the Thunder Basin National Grassland FEIS and LRMP was signed on July 31, 2002 (USDA-FS 2002). The West Antelope LBA Tract falls within Management Area 8.4, as identified in the 2002 Thunder Basin National Grassland LRMP, which is to be managed for mineral production and development. Consultation with USFWS was conducted as part of the 2002 LRMP.

Appendix B of this EIS summarizes the unsuitability criteria, describes the general findings for the previous screening analyses discussed above, and presents the findings for the West Antelope LBA Tract based on the current information.

Consultation with USFWS has previously been conducted for the area included within the Antelope Mine's existing approved mining permit area (Figure J-3) as part of the mining and reclamation plan approval process. This process began when the Antelope Mine was initially permitted in 1982. Most recently, in the December 2001 mine permit State Decision Document for the Antelope Mine is a letter dated December 17, 2001, from Michael M. Long, USFWS, Cheyenne, Wyoming, to Larry Kline, Office of Surface Mining Reclamation and Enforcement (OSM), Denver, Colorado, verifying that the USFWS "is satisfied with the species-specific protective measures required to satisfy the consultation requirements of Section 7 of the Endangered Species Act (ESA) of 1973, as amended (ACT), for the Horse Creek Amendment permit". Furthermore, the USFWS reviewed the Migratory Birds of High Federal Interest (MBHFI) protection plan in the mine permit and, as stated in the December 2001 State Decision Document, has not given concurrence to the plan, stating the plan does not contain adequate commitment for the amount of mountain plover habitat that will be reclaimed and reestablished and does not contain adequate bond release criteria. Therefore, a condition was attached to ACC's permit stating that when the plan is approved by the USFWS, the approval letter will be inserted into the mine permit document. In June 2003, ACC submitted a mine permit term renewal package to the Wyoming Department of Environmental Quality/Land Quality Division (WDEQ/LQD) that covers mining from November 3, 2003 through November 3, 2008. Within that renewal application is a revised MBHFI protection plan that was also submitted to the USFWS for review in March 2003. The USFWS gave approval of the new plan in a letter dated May 8, 2003, from Jodi L. Bush, USFWS, Cheyenne, Wyoming, to Patrick J. Baumann, ACC, Gillette, Wyoming. That approval letter will be inserted into the mine permit upon WDEQ's approval of the renewal package, which is expected to occur October 2003.

USFWS provided BLM a listing of the threatened, endangered, and proposed species that may be present in the project area in a letter dated June 7, 2002 (USFWS 2002a). The following list of species that was provided by USFWS represents the federally listed T&E species, species proposed for listing, and candidate species that may occur in the SPRB Coal EIS General Analysis Area.

Birds

Bald eagle (*Haliaeetus leucocephalus*): Threatened (Proposed for Delisting)
Mountain plover (*Charadrius montanus*): Proposed Threatened

Mammals

Black-footed ferret (*Mustela nigripes*): Endangered
Black-tailed prairie dog (*Cynomys ludovicianus*): Candidate

Plants

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

The Draft SPRB Coal EIS was distributed in January 2003. USFWS submitted comments on the Draft SPRB Coal EIS on April 11, 2003.

J-4.0 SPECIES HABITAT AND OCCURRENCE AND EFFECTS OF THE PROPOSED PROJECT

The Antelope Mine began producing coal in 1985. Wildlife monitoring has been conducted annually for the mine since 1982. Because the areas covered in the wildlife surveys include the mine permit area and a two-mile perimeter, much of the area in the West Antelope LBA Tract has been included in annual wildlife surveys conducted for the Antelope Mine since 1982. 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 USFWS. 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 West Antelope LBA Tract was drawn from several sources, including: annual wildlife monitoring reports submitted by ACC to the WDEQ/LQD from 1982-2002, the Final EIS for the Horse Creek Coal Lease Application (BLM 2000), the Final Environmental Assessment for the Antelope Coal Lease Application (BLM 1995), the Final EIS for the Powder River Coal and Thundercloud Coal Lease Applications (BLM 1998), the Final EIS for the North Rochelle Coal Lease Application (BLM 1997), a Wyoming Natural Diversity Database search (University of Wyoming 2001), WGFD and USDA-FS records, and personal contacts with WGFD and USFWS biologists. Although there are no USDA-FS surface lands included in the West Antelope LBA Tract, portions of the study area were formerly USDA-FS surface, managed as part of the TBNG. Thus,

USDA-FS data on a number of species were available in the vicinity of the proposed lease.

Site-specific data for a substantial portion of the proposed lease area and Antelope Mine's anticipated permit amendment study area were obtained from several sources, including WDEQ/LQD permit applications and annual reports for the Antelope Mine and other nearby coal mines. Baseline wildlife studies were conducted by Thunderbird Wildlife Consulting, Inc. (TWC) expressly for the West Antelope LBA Tract beginning in April 2003 and will be ongoing through at least March 2004. A report will be prepared by TWC after March 2004, when all studies have been completed. In addition to those specific studies, the proposed lease area has received comprehensive coverage during baseline and annual wildlife monitoring surveys for the adjacent Antelope Mine since the late 1970s. Baseline and annual monitoring surveys cover large perimeters around each mine's permit area. Consequently, a majority of the proposed lease area has been covered during baseline and annual wildlife monitoring surveys for the Antelope Mine (Figure J-4).

The topography within the vicinity of the LBA tract is mainly gently rolling to steeply sloping. Elevation ranges from approximately 4,590 feet (ft) to 4,800 ft above sea level. Predominant habitat types within the LBA tract and adjacent area consists primarily of upland grassland, with limited areas of sagebrush-grassland and rough breaks in the northeast portion. Antelope Creek passes through the central part of the tract from west to east, and its tributary, Spring Creek, runs northwest-southeast through its northern half. Streams on the LBA tract and surrounding area are ephemeral or intermittent, but a few persistent pools are often present in their channels. Bottomland, or riparian habitat is found along these drainage channels. The only trees in the area are sparse cottonwood stands along Antelope Creek and Spring Creek. Many of the trees in the Spring Creek stand are dead or dying. A few isolated trees are also present within tributary drainage heads along the east edge of the Alternative 2 tract configuration. No more than four small stock reservoirs exist in the LBA tract and adjacent study area, few of which sometimes hold water year round.

ACC's approved mining plan avoids disturbing Antelope Creek and an adjacent buffer zone and ACC does not propose to disturb Antelope Creek if they acquire a lease for the West Antelope LBA Tract.

Within the General Analysis Area there is no "Critical" habitat designated by USFWS for threatened or endangered species. The following discussion describes species' habitat requirements and their occurrence in the area of the West Antelope LBA Tract and evaluates the potential environmental effects of the Proposed Action and Action Alternatives on federally endangered, threatened, proposed, and candidate species.

All of the surface estate on the West Antelope LBA Tract is privately owned.

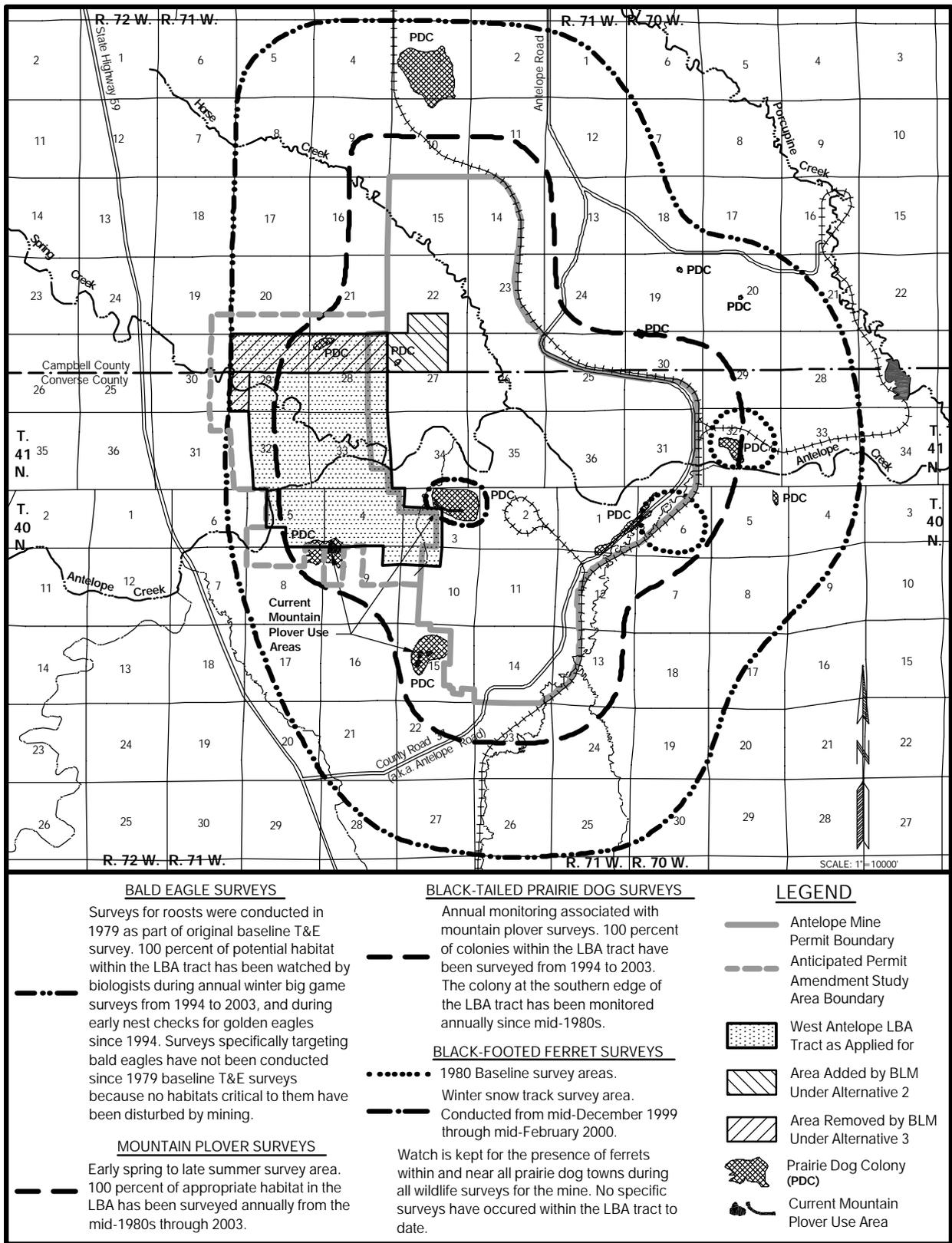


Figure J-4. T & E Animal Species Survey Areas for the Antelope Mine and West Antelope LBA Tract.

J-4.1 Threatened Species

J-4.1.1 Bald eagle (*Haliaeetus leucocephalus*)

Biology and Habitat Requirements: On February 14, 1978, the bald eagle was listed as endangered in all of the coterminous United States except Minnesota, Wisconsin, Michigan, Oregon, and Washington, where it was classified as threatened (43 F.R. 6233). The USFWS 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 free of disturbance, containing 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 utilize 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 (e.g., 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 (USFWS 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, USFWS 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 known nest sites, or concentrated prey or carrion sources for bald eagles are present in the area of the Antelope Mine, including in the West Antelope study area. However, this species has infrequently been seen foraging in the general vicinity of the West Antelope LBA Tract and perched in cottonwood trees along Antelope Creek, which passes through the LBA tract and adjacent Antelope Mine. ACC would not disturb Antelope Creek and an adjacent buffer zone in the process of mining the West Antelope LBA Tract or their existing coal leases. The nearest known communal bald eagle roosts are over six miles to the east and southwest of the LBA tract. A few isolated bald eagle nesting attempts have been recorded in the region, but none have been near the West Antelope LBA Tract.

During a February 28, 2001 survey conducted for the North Antelope/Rochelle Complex by TWC, three adult bald eagles were seen perching in a small cottonwood tree along Horse Creek in the NE¼ of Section 22, T.41N., R.71W. Because of the small stature of the tree and the small number of eagles, this was not classified as a bald eagle roost. TWC also reported the following bald eagle observations within the Wildlife Section of Antelope Mine's 2001 and 2002 WDEQ/LQD Annual Reports:

- Two adult eagles were seen feeding on a mule deer carcass on reclaimed lands in Section 14, T.40N., R.71W. in the month of January.
- On February 19, two adult eagles were seen perched in the Antelope Creek riparian corridor in Section 31, T.41N., R.70W. The same day, an immature eagle was seen perched on a power pole along Antelope Creek in Section 32, T.41N., R.70W, an adult bird was seen perched on the ground near a mule deer carcass in Section 12, T.40N., R.71W., and an immature eagle was observed flying over the rough breaks in Section 24, T.40N., R.71W.
- On March 7, two adults and one immature bird were recorded perched on a ridge along the extreme east edge of the mine's two-mile monitoring perimeter.
- On March 17, an immature eagle was seen perched in a cottonwood tree in the Antelope Creek riparian corridor in Section 31, T.41N., R.70W., an adult eagle was observed perched in a cottonwood tree in the Antelope Creek riparian corridor in Section 32, T.41N., R.70W., three adults were seen perched in trees in Section 33, T.41N., R.70W., and an adult bird was seen perched on a hilltop in Section 12, T.40N., R.71W.
- An adult bird was observed perched on a power pole in Section 12, T.40N., R.71W on April 1.

- In 2002, the only individual recorded in the permit area was an immature bald eagle perched in cottonwood trees along Antelope Creek in the SE¼, SE¼ of Section 33, T.41N., R.71W.
- On April 5, 2002, a mixed group of seven adult and immature bald eagles flushed from rough breaks about one mile northeast of the Antelope Mine permit boundary, in the NW¼, NW¼ of Section 30, T.41N., R.70W.

TWC will conduct surveys for roosting bald eagles on the West Antelope LBA study area during the winter of 2003-2004. Roosting bald eagle sightings have been recorded in the vicinity of the West Antelope LBA Tract during winter big game surveys for the Antelope Mine annually since 1994 by Powder River Eagle Studies and TWC (Gwyn McKee, personal communication 10/7/2003).

Effects of the Proposed Project: Mining the federal coal lease included in the West Antelope LBA Tract, if the tract is leased under the Proposed Action or Action Alternative, may affect, but is not likely to adversely affect bald eagles. 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. If the federal coal in the West Antelope LBA Tract 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. No known nest sites, or concentrated prey or carrion sources for bald eagles are present on the West Antelope LBA Tract or within the anticipated permit area for the West Antelope LBA Tract under the Proposed Action or Action Alternatives, including the Preferred Alternative. Bald eagle foraging habitat would be lost on the tract during mining and before final reclamation. The loss of any potential prey habitat would be short-term. The Antelope Mine and West Antelope LBA Tract areas do not provide any reliable or concentrated food sources for eagles, and the loss of any potential foraging habitat would be short-term. Foraging habitat that is lost during mining would be replaced as reclamation continues on already mined out areas. Eagles may alter foraging patterns as they fly around areas of active mining activity. Bald eagles could potentially nest or roost in the LBA study area, but neither activity has been documented on the undisturbed tract. ACC would not disturb Antelope Creek and an adjacent buffer zone in the process of mining the West Antelope LBA Tract or their existing coal leases. Cottonwood trees located within the Antelope Creek buffer zone would not be affected and would be available as perching and nesting sites. Cottonwood trees outside of the buffer zone along Antelope Creek would be replaced with plantings along Antelope Creek, Spring Creek, and other reclaimed drainages, eventually restoring perching and nesting sites. 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 raptor-safe power lines, which is required under SMCRA (30 CFR 816.97). Use of roads accessing Antelope Mine by mine-related traffic would continue when the West Antelope LBA Tract is mined, which may result in an increase in vehicular collisions and roadside carcasses. This could result in bald eagle foraging

along roads in this area, which increases the potential for road kills of foraging bald eagles to occur.

Cumulative Effects: Mineral development, including coal bed methane (CBM) development, conventional oil and gas development, and surface coal mining, is a leading cause of habitat loss within the PRB. CBM development has occurred and is proposed in this area. Surface coal mining has been ongoing at the Antelope Mine for almost 20 years.

J-4.1.2 Ute ladies'-tresses (*Spiranthes diluvialis*)

Biology and Habitat Requirements: Ute ladies'-tresses, a member of the orchid family, 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, and invasion of exotic plant species. At the time of listing, Ute ladies'-tresses was only known from Colorado, Utah, and extreme eastern Nevada. It was then 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 cobbly 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, such as grazing, that are common to grassland riparian habitats (USFWS 1995). Ute ladies'-tresses colonize early successional riparian habitats such as point bars, sand bars, and low-lying gravelly, sandy,

or cobblely 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 (USFWS 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 1993-1997 (Fertig and Beauvais 1999). One of these occurrences is recorded from northwestern Converse County, within the Antelope Creek watershed.

Existing Environment: Areas of suitable habitat within the West Antelope LBA Tract and the anticipated permit amendment study area, the majority of which are found along the Antelope and Spring Creek drainages, were surveyed by BKS Environmental (Brenda Schladweiler) in August 2001. Topographical and wetland delineation maps for the study area were reviewed to identify all significant drainages that may contain the orchid. Suitable habitat factors included less steep stream banks, light soil texture and well drained soils, close lateral or vertical distance to perennial water source during the flowering period, lack of plant competition, lack of general soil alkalinity/salinity, and current or historical management practices that did not promote overgrazing and extensive use of riparian areas. Suitable habitat was traversed on foot during the time of actual flowering of the known population, and it involved walking entire lengths of the drainages documenting locations of potential habitat and searching for this species. Prefield work involved a visit to a known population of the orchid to verify the correct phenological state (flowering) of the orchid. The existing orchid population is located near the Ross Road on Antelope Creek approximately 25 miles upstream of Antelope Mine. Approximately seven individuals were observed to be in initial flowering stages on August 16; it appeared that this population was somewhat behind previous flowering schedules and may have been related to heavy July precipitation events on Antelope Creek in northern Converse County.

Antelope Creek, which flows from west to east through the West Antelope LBA Tract, is classified as an intermittent stream because it receives baseflow from the Anderson and Canyon coal aquifers, but it is dry for a portion of the year over most of its course. Several unnamed and two named (Spring Creek and Thomas Draw) tributaries of Antelope Creek drain portions of the West Antelope LBA Tract. These tributaries are classified as ephemeral. Several stock reservoirs are present on these ephemeral drainages in the study area and all are constructed earthen berms or dams. These ponds generally contain water only in early spring, then dry up in summer. A total of 33.52 acres of waters of the U.S. (31.77 acres of jurisdictional wetlands and 1.75 acres of jurisdictional other waters of the U.S.) have been identified within the West

Antelope tract as applied for, the area added by Alternative 2, and a buffer area around the tract sufficient to mine and reclaim the tract as a part of the existing Antelope mining operation.

No individuals of the Ute ladies'-tresses orchid were located during these 2001 surveys.

Effects of the Proposed Project: Mining the federal coal included in the West Antelope LBA Tract, if the tract is leased under the Proposed Action or Action Alternatives, may affect, but is not likely to adversely affect Ute ladies'-tresses. Typical suitable habitat for this species is present on the tract along the Antelope Creek valley, which ACC would not disturb, along with an adjacent buffer zone, in the process of mining the West Antelope tract or their existing coal leases. Outside of the Antelope Creek valley, typical suitable habitat is rare in the study area. Surveys of the existing suitable habitat at the Antelope Mine and other mines in this area have not found any Ute ladies'-tresses. Because of the ability of this species to persist below ground or above ground without flowering, single season surveys that meet the current USFWS 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 extirpated Ute ladies'-tresses from most of its historical range (USFWS 2002b). Disturbance and reclamation of streams by surface coal mining may alter stream morphology and hydrology. The large quantities of water produced with CBM development and discharged on the surface may also alter stream morphology and hydrology. Jurisdictional wetlands located in the West Antelope LBA Tract 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 U.S. Army 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 may require restoration of additional acres if the type and function of the restored wetlands will not completely replace the type and function of the original wetland.

J-4.2 Endangered Species

J-4.2.1 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 upon 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 United States. Ferrets may occur within colonies of white-tailed or black-tailed prairie dogs. The USFWS has determined that, at a minimum, potential habitat for the black-footed ferret must include a single white-tailed prairie dog colony of greater than 200 acres, or a complex of smaller colonies within a 4.3 mile (7 kilometers) radius circle totaling 200 acres (USFWS 1989). Minimum colony size for black-tailed prairie dog is 80 acres (USFWS 1989). The last known wild population 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.

Existing Environment: The West Antelope LBA Tract is within the historical range of the black-footed ferret, although no black-footed ferrets are presently known to occur in northeastern Wyoming. Multiple years of wildlife surveys covering the Antelope Mine 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, contributing, but colonies had declined to less than the 1961 estimates 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 (USFWS 2000b). During the 1980s, the Wyoming Game and Fish Department (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. The State of Wyoming is in the process of recommending to the USFWS that most of the state be cleared for black-footed ferrets, and that no further black-footed ferret surveys be required in the remaining black-tailed prairie dog ranges in Wyoming (Martin Grenier, personal communication 10/14/2003).

Prairie dogs are the main food source of black-footed ferrets, and few ferrets have been collected away from prairie dog colonies. In 2000, TWC mapped the current acreage of prairie dog colonies in the vicinity of the Antelope Mine by walking the perimeters of colonies and delineating them on topographic maps. Approximately 110 acres of black-tailed prairie dog colonies, in four small colonies, are currently present on and within one-half mile of the West Antelope LBA Tract as proposed and the area added by Alternative 2. No evidence of ferrets has been recorded during general or specific ferret surveys over the last 25 years (1978–2003) conducted by wildlife consultants (Powder River Eagle Studies and TWC) for the Antelope Mine and other mines in this area. A snow-track survey for ferrets in the black-tailed prairie dog colony,

located in the NE¼ of Section 3, T40N, R71W, was conducted in the winter of 1999-2000 (Figure J-4). No sign of ferrets were observed and the USFWS concurred with the survey results. The USDA-FS conducted surveys on all prairie dog colonies in the TBNG throughout the 1980s. The only evidence of black-footed ferret presence resulting from any survey in the region was a single skull collected during baseline studies for Antelope Mine in 1979 in a prairie dog colony roughly three miles east of the LBA tract. That colony was poisoned in 1982, but has since been recolonized.

Surveys for ferrets on the West Antelope LBA study area are scheduled by TWC during the winter of 2003-2004, as conditions allow.

A ferret reintroduction area has been designated in an area of larger concentrations of prairie dog colonies, located east of the coal burnline, outside of the area of surface coal mining. Based on USDA-FS observations, the scoria or clinker that forms the Rochelle Hills in this area serves as at least a partial barrier to prairie dogs (Tim Byer, personal communication 9/29/2003). This is evidenced by the fact that the prairie dog colonies east of the burnline have been drastically affected by sylvatic plague, which has not affected the prairie dog colonies west of the burnline.

Effects of the Proposed Project: Mining the federal coal included in the West Antelope LBA Tract, if a lease is issued under the Proposed Action or Action Alternatives, would 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 population in Wyoming. Recent declines are largely attributed to sylvatic plague and are likely to continue (USFWS 2000b). An outbreak of plague east of the coal burnline, has drastically affected the prairie dog population in that area, but the prairie dog towns west of the burnline, in the area of surface coal mining, have not yet been affected by plague. The reductions in black-tailed prairie dog populations due to poisoning prior to 1972 and due to recent plague outbreaks reduced the potential for black-footed ferret survival in northeastern Wyoming. Searches of the best remaining black-footed ferret habitat in Wyoming conducted in the 1980s were not successful in finding any ferrets. General wildlife surveys and specific ferret surveys have been conducted for many years at the Antelope Mine, starting in 1979, and at other mines in this area. No black-footed ferrets have ever been observed during these surveys. The only indication of black-footed ferret presence from any survey in the region was a single skull collected during baseline studies for Antelope Mine in 1979 in a prairie dog colony roughly three miles east of the LBA tract.

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 resources are depleted. In reclaimed areas, vegetation cover may differ from undisturbed areas. In the case of surface coal mines, re-established vegetation would be dominated by species mandated in the reclamation seed mixtures (to be approved by WDEQ). The majority of the approved plant species are native to the area; however, reclaimed areas may not serve ecosystem functions presently served by undisturbed vegetation communities and habitats, particularly in the short-term, when species composition, shrub cover, and other environmental factors are likely to be different. Shifts in habitat composition or distribution following reclamation could increase or decrease potential habitat for prairie dogs in this area.

Potential ferret habitat is also affected by other impacts to prairie dog populations. Plague can infect and eliminate entire prairie dog colonies. Poisoning and recreational prairie dog shooting may locally reduce prairie dog populations, but seldom completely eliminate colonies.

J-4.3 Proposed Species

J-4.3.1 Mountain plover (*Charadrius montanus*)

Biology and Habitat Requirements: USFWS published a proposed rule to list the mountain plover as threatened in 1999 (USFWS 1999a). The USFWS published a 60-day extension to the comment period on April 19, 1999 (USFWS 1999b). In October 2001, the USFWS designated the mountain plover as a proposed threatened species (USFWS 2001). On December 5, 2002, USFWS published a notice of new information and reopening of the comment period on the proposed rule to list the mountain plover as threatened (USFWS 2002c). On September 9, 2003, USFWS published a withdrawal of the proposed rule to list the mountain plover as threatened (USFWS 2003). The USFWS has advised BLM that they will no longer be reviewing project impacts to the mountain plover under the Endangered Species Act; however, they encourage provisions that would provide protection for this species, as it continues to be protected under the Migratory Bird Treaty Act.

The mountain plover is a migratory species of the shortgrass prairie and shrub-steppe eco-regions of the arid West. This species utilizes high, dry, shortgrass prairie with vegetation typically shorter than four inches tall. Within this habitat, areas of blue grama (*Bouteloua gracilis*) and buffalograss (*Buchloe dactyloides*) are most often utilized, as well as areas of mixed-grass associations dominated by needle-and-thread (*Stipa comata*) and blue grama (Dinsmore 1983).

Mountain plovers often use black-tailed prairie dog towns for breeding, nesting, and feeding. Not all prairie dog towns offer suitable habitat for mountain plover, mostly due to topographic incompatibility. There are habitats other

than prairie dog towns that provide nesting, feeding, and breeding habitat for mountain plover.

The nest of the mountain plover consists of a small scrape on flat ground in open areas. Most nests are placed on slopes of less than five degrees in areas where vegetation is less than three inches tall in April. More than half of identified nests occurred within 12 inches of old cow manure piles and almost twenty percent were found against old manure piles in similar habitats in Colorado. Nests in similar habitats in Montana (Dinsmore 1983) and other areas (Ehrlich et al. 1988) were nearly always associated with the heavily grazed shortgrass vegetation of prairie dog colonies.

Mountain plovers arrive on their breeding grounds in late March with egg-laying beginning in late April. Breeding plovers show close site fidelity, often returning to the same territory in subsequent years. Clutches are hatched by late June and chicks fledge by late July. The fall migration begins in late August and most birds are gone from the breeding grounds by late September.

Existing Environment: The BLM Buffalo Field Office contracted two mountain plover nesting surveys in 2001 (Good et al. 2002, Keinath and Ehle 2001). Both contracted surveys conclude mountain plover habitat within the PRB may be sparse and fragmented (Good et al. 2002, Keinath and Ehle 2001). Much of the PRB is dominated by rolling sagebrush. Good et al. (2002) believe that bare ground and vegetation height are the limiting habitat components in the basin's prairie communities; the areas they detected mountain plovers within the Powder River Basin appeared to receive less precipitation and have greater amounts of short grass prairie than the rest of the basin. However, both surveys caution more suitable mountain plover habitat exists than they were able to survey, as they were limited to public roads (Good et al. 2002, Keinath and Ehle 2001).

Annual surveys for mountain plovers have been conducted at the Antelope Mine since 1982. Additional intensive studies were conducted from 1985 through 1988 (Parrish 1988, Oelklaus 1989). ACC's staff biologist conducted the annual surveys from 1982 through 1993 and TWC (formerly Powder River Eagle Studies) has conducted all surveys after 1993. Each year, the survey area includes the Antelope Mine permit area and a half-mile perimeter, with special emphasis in areas where birds have been seen in the past (including areas beyond that survey area). The eastern three-quarters of the West Antelope LBA Tract has been surveyed in most years since 1982. Surveys for migrant and nesting mountain plovers occurred from early spring through late summer each year. Personnel have conducted vehicular and pedestrian surveys and searches of all known former use areas and potential new use areas each year. Data collected during surveys included number of birds, age (when possible), location, activity, and habitat.

Results of those studies have demonstrated that the mountain plover is a regular migrant and summer resident in the vicinity of Antelope Mine and portions of the LBA tract. Over time, the birds tended to be observed foraging and nesting in roughly the same areas from year to year. In recent years (1994 to 2001), two to three pairs have nested in a small (approximately 88 acres) black-tailed prairie dog colony that straddles the southern boundary of the LBA tract. That colony also appears to be a regular late summer staging area for migrating mountain plovers. Although the entire 88-acre prairie dog colony appears to provide suitable foraging and nesting habitat, mountain plovers have regularly been seen in only about 15 of the 88 total acres of colony; five acres of which overlap the southern edge of the LBA tract. Other sightings of mountain plovers on the proposed lease area were made in a small (approximately 14 acres) prairie dog colony near the north-central boundary of the tract. A single adult was seen foraging within that colony one time during the 2000 and 2001 spring surveys. Historically, mountain plovers have been observed along the northeastern edge of the LBA tract as proposed, where it meets the southwest corner of the area added under Alternative 2. However, plovers were observed in that area only two of the last 19 years, nesting there only one year. The last sighting of mountain plovers in the Alternative 2 area occurred in 1990. The area has since become largely overgrown with sagebrush and is no longer suitable plover habitat.

One or two pairs of mountain plovers have occasionally nested in a small (approximately 126 acres) prairie dog colony just beyond the east-central edge of the LBA tract. The majority of that prairie dog colony was impacted by mining operations after the 2000 breeding season, but approximately three acres remained intact and active following that disturbance. In May 2001, Antelope Mine and USFWS agreed upon a mitigation plan for the portion of the colony that had been used by mountain plovers over time. ACC's mining and reclamation plan and MBHFI mitigation plan both include measures designed to reduce potential impacts to this species and guide the reclamation of its habitat. Antelope Mine and USFWS have worked to refine the specific measures to be used during protection and reclamation efforts, as well as acreages to be reclaimed. A comprehensive review of nearly 20 years' of data on mountain plover use in the vicinity of the Antelope Mine also led to the reclassification of some long-term inactive areas as "Former Use Areas." ACC will continue to include those areas and the West Antelope LBA Tract study area in annual monitoring for the Antelope Mine. All use areas within the final configuration of the West Antelope LBA Tract will be included in a USFWS-approved mitigation plan that will be incorporated into Antelope Mine's WDEQ/LQD mine permit.

Effects of the Proposed Project: Mining the federal coal included in the West Antelope LBA Tract, if the tract is leased under the Proposed Action or Action Alternatives, would impact typical suitable habitat for mountain plover that is currently located on the tract, but would not be likely to jeopardize the species in this area. Mountain plovers regularly nest and

stage in a black-tailed prairie dog colony that straddles the southern boundary of the tract. Potential impacts to mountain plovers would include loss of habitat and displacement to suitable habitat nearby. However, depending on the timing of the disturbance, such impacts may be mitigated to some extent by natural circumstances.

The mountain plovers that frequent the LBA tract are almost exclusively found in a small prairie dog colony that straddles the southern boundary of the tract. The birds typically use a 15-acre portion of the colony of which about five acres occur on the LBA tract. It is possible that during the interim between applying for the lease and mining the LBA tract, the prairie dog colony may naturally expand. If the expansion was to the south, it could increase the quantity of plover habitat beyond the LBA tract boundary prior to any losses. If prairie dogs do not voluntarily expand to the south prior to mining the LBA tract, those animals that survive may do so after the initial development activities begin. Mountain plovers may also choose to move from this prairie dog colony to a similar colony approximately one mile to the southeast. However, such a move could result in conflicts and competition for resources with the mountain plovers that already inhabit that colony. Alternatively, mountain plovers may move from the prairie dog colony near the south boundary of the LBA tract to a similar area of naturally sparse vegetation roughly one mile due south of the current colony. Adult and young mountain plovers have infrequently been seen in that area in recent years.

TWC states the following within Antelope Mine's 2001 Annual Wildlife Monitoring Report to the WDEQ/LQD: "Given the species' willingness to return to areas disturbed by mining, the long-term stability of the number of breeding pairs in the area, and the quantity of apparently suitable but unoccupied habitat in the area, it seems that mining operations at Antelope are not adversely impacting mountain plovers".

Antelope Mine's currently approved mining and reclamation plan and MBHFI mitigation plan both include measures designed to reduce potential impacts to this species and guide the reclamation of its habitat. Antelope Mine has worked with USFWS to revise and refine the specific measures to be used during protection and reclamation efforts, as well as the acreage to be reclaimed. A new plan, which was recently developed and given final approval by the USFWS, will be incorporated into Antelope Mine's renewed permit document in November 2003. As part of the new plan, USFWS agreed that ACC would restore 160 acres of mountain plover habitat to mitigate the loss of such habitat due to previous mining. The habitat restoration involved establishing mountain plover habitat in reclaimed areas through the translocation of prairie dogs into artificially constructed colonies, because mountain plovers in this vicinity have been observed to be most common in black-tailed prairie dog colonies. The project was initiated in 2002, when TWC constructed prairie dog colonies at two sites on reclaimed land and began translocating prairie dogs. If the West Antelope LBA Tract is leased, the

existing plan would be updated and submitted to the USFWS and WDEQ/LQD for approval prior to mining as part of the mining and reclamation permit process.

Cumulative Effects: Mineral development is likely to have both beneficial and detrimental effects on mountain plover. Mining activities tend to have more intense impacts on fairly localized areas, while oil and gas development tends to be less intensive but spread over larger areas. Surface disturbance within suitable habitat will likely result in short term habitat loss in areas to be reclaimed, and permanent or long-term loss where roads and permanent or long-term facilities are located. Power poles, conveyors, and other structures are likely to provide perch sites and hiding cover for mountain plover predators. Vehicle traffic may occasionally run over mountain plovers or their nests. Mineral development may benefit plovers where surface disturbance provides bare ground and reduces shrub cover (Dechant et al. 2001).

Oil and gas development and mining activities have requirements for reclamation of disturbed areas as resources are depleted. 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 (to be approved by WDEQ). The majority of the approved plant species are native to the area, however, reclaimed areas may not serve ecosystem functions presently served by undisturbed vegetation communities and habitats, particularly in the short-term, when species composition, shrub cover, and other environmental factors are likely to be different. Shifts in habitat composition or distribution following reclamation could increase or decrease potential habitat for prairie dogs in this area, which could lead to an increase or decrease in potential habitat for mountain plovers in this area.

J-4.4 Candidate Species

J-4.4.1 Black-tailed prairie dog (*Cynomys ludovicianus*)

Biology and Habitat Requirements: The black-tailed prairie dog was added to the list of candidate species for federal listing on February 4, 2000 (USFWS 2000a). At that time, the USFWS concluded that listing the black-tailed prairie dog was warranted but precluded by other higher priority actions to amend the lists of T&E species. No specific date for proposal for listing was given, but the USFWS committed to reviewing the status of the species one year after publication of the above-mentioned notice (i.e., on February 4, 2001) (USFWS 2000b). As of June 2002, the USFWS was listing the black-tailed prairie dog as a candidate (USFWS 2002a).

The black-tailed prairie dog is a highly social, diurnally active, burrowing mammal. Aggregations of individual burrows, known as colonies, form the basic unit of prairie dog populations. Found throughout the Great Plains in

shortgrass and mixed-grass prairie areas (Fitzgerald et al. 1994), the black-tailed prairie dog has declined in population numbers and extent of colonies in recent years. The three major impacts that have influenced black-tailed prairie dog populations are the initial conversion of prairie grasslands to cropland in the eastern portion of its range from approximately the 1880s-1920s; large-scale control efforts conducted from approximately 1918 through 1972, when an Executive Order was issued banning the use of compound 1080; and the introduction of sylvatic plague into North American ecosystems in 1908 (USFWS 2000b). In Wyoming, this species historically occurred east of the Rocky Mountain foothills and may have occupied millions of acres (USFWS 2000b). It is primarily currently found in isolated populations in the eastern half of the state (Clark and Stromberg 1987). USFWS recently estimated that about 125,000 acres of black-tailed prairie dog occupied habitat exists in Wyoming (USFWS 2000b). Many other wildlife species, such as the black-footed ferret, swift fox, mountain plover, ferruginous hawk, and burrowing owl are dependent on the black-tailed prairie dog for some portion of their life cycle (USFWS 2000b).

The species is considered a common resident, utilizing shortgrass and mid-grass habitats in eastern Wyoming (Luce et al. 1999).

Existing Environment: In 2000, TWC mapped the current acreage of prairie dog colonies in the vicinity of the Antelope Mine by walking the perimeters of colonies and delineating them on topographic maps. Approximately 110 acres of black-tailed prairie dog colonies, in four small colonies, are currently present on and within one-half mile of the West Antelope LBA Tract as proposed and the area added by Alternative 2. Two colonies are included in, or overlap the LBA tract under the Proposed Action; one in the north-central part and one in the south-central part. Both areas were described in the discussion of mountain plovers above. A third colony covers roughly 2.5 acres in the southwest corner of the area added by Alternative 2. That colony was established in 2000, presumably by survivors of the poisoning efforts that apparently took place in the northern-most colony within the LBA tract in the fall/winter of 1999. The fourth colony consists of the remains of a colony that was disturbed by mining just beyond the east-central boundary of the LBA tract. In addition to these four colonies in the immediate vicinity of the West Antelope LBA Tract, at least four more small colonies are known to exist within the same complex (4.3-mile radius) in that area.

According to UDSA-FS observations, on the TBNG in the vicinity of the surface coal mines, the largest concentrations of prairie dog colonies are found east of the coal burnline, which is outside and east of the area of surface coal mining (Tim Byer, personal communication 9/11/2003). The large prairie dog complexes in this area east of the coal burnline have been drastically impacted by outbreaks of plague. The prairie dog colonies west of the burnline, including the area occupied by the West Antelope LBA Tract, are generally

smaller and less densely concentrated. These colonies have not been affected by plague.

USDA-FS has not allowed poisoning of prairie dogs on TBNG lands since the prairie dog was proposed for listing as a threatened species. Poisoning of prairie dogs by private landowners in this area has not been affected by the USDA-FS poisoning restrictions.

Effects of the Proposed Project: Mining the federal coal included in the West Antelope LBA Tract, if the tract is leased under the Proposed Action or Alternative 2, would be likely to directly and indirectly affect individuals and colonies of the black-tailed prairie dog, but is not likely to jeopardize the continued existence of black-tailed prairie dogs. All or portions of three black-tailed prairie dog colonies are currently located on the tract and lands added under Alternative 2: two on the tract as proposed and one on the Alternative 2 area. While this project may impact individuals and colonies, it is not likely to jeopardize the continued existence of this candidate species in this area. Much of the largest colony lies outside of the proposed lease area. It may be possible to preserve some portions in the largest colony at the southern edge of the tract. Any surviving animals could then serve as a source of prairie dogs for re-colonization of the mine area during and after reclamation. Habitat where prairie dogs could establish towns would be lost during mining but would be replaced as reclamation occurs on already mined areas or through the possible translocation of prairie dogs to other areas. As discussed in Section J-4.3, in May of 2002, USFWS agreed that ACC would restore 160 acres of mountain plover habitat to mitigate the loss of such habitat due to previous mining. Mountain plovers in this vicinity have been observed to be most common in black-tailed prairie dog colonies, so the habitat restoration involves the translocation of prairie dogs into artificially constructed colonies. The project was initiated in 2002, when TWC constructed new prairie dog colonies at two sites on reclaimed land and began translocating prairie dogs.

J-5.0 SUMMARY OF DETERMINATIONS

Table J-2.1 summarizes the determinations for federally listed threatened, endangered, proposed, and candidate species in the area of the West Antelope LBA Tract that may result from implementing the Proposed Action or Action Alternatives.

Table J-2.1 Effects Evaluation of Federal Threatened, Endangered, Proposed, and Candidate Species in the Area of the West Antelope LBA Tract.

Status	Species Common Name	Potential Effects
Threatened:	Bald eagle	May affect ¹
	Ute ladies'-tresses	May affect ¹
Endangered:	Black-footed ferret	No effect ¹
Proposed:	Mountain plover	Would affect ²
Candidate:	Black-tailed prairie dog	Would affect ³

¹ Not likely to adversely affect individuals or populations.
² Not likely to jeopardize continued existence of proposed threatened individuals or populations.
³ Not likely to jeopardize continued existence of candidate individuals or populations.

J-6.0 REGULATORY REQUIREMENTS AND MITIGATION

The issuance of a Federal coal lease grants the lessee the exclusive rights 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 the Surface Mining Control and Reclamation Act of 1977 (SMCRA) and Wyoming State regulations. 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 the State of 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 stringent than, meet the minimum requirements of, and include all applicable provisions of SMCRA.

If the West Antelope LBA Tract is leased, it would be a maintenance lease for the existing Antelope Mine, which currently has 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 before starting surface coal mining operations on the newly acquired leases. WDEQ/LQD would review the permit application package to insure the permit application complies with the permitting requirements and 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.

Protection of fish, wildlife, and related environmental values is required under SMCRA regulations at 30 CFR 816.97, 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 Secretary of which is likely to result in the destruction or adverse modification of designated critical habitats of such species in violation of the Endangered Species Act of 1973, as amended.”

In addition to requiring the operator to minimize disturbances and adverse impacts on fish, wildlife, and related environmental values, the regulations at 30 CFR 816.97 disallow any surface mining activity which is likely to jeopardize the continued existence of endangered or threatened species and 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. Section 7 consultation would be required prior to approval of the mining and reclamation plan modification. Additional mitigation measures to ensure compliance with the ESA and SMCRA 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 specific to an actual proposal to mine at this time.

The following is a partial list of measures that are required as part of the mining and reclamation permits:

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

J-7.0 CUMULATIVE IMPACTS

Existing habitat-disturbing activities in the PRB include surface coal mining; conventional oil and gas and CBM 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 CBM) oil and gas fields are, for the most part, concentrated in the central and southern parts of the structural basin. Development of the CBM resources from the coal beds is a more recent occurrence, with CBM production in the Wyoming PRB starting in the late 1980s. According to the Wyoming Oil and Gas Conservation Commission, there are approximately 15,040 oil and gas wells currently producing in the Wyoming PRB. Most (approximately 12,530) of those wells are CBM 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 CBM and conventional oil and gas development in the Wyoming 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 CBM wells and 3,200 new conventional wells and associated facilities, starting in 2002 and continuing for 10 years. The project area for this analysis encompassed approximately eight million acres, and included 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.

BLM estimates that the existing federal coal leases in the Wyoming PRB include approximately 103,615 acres. The currently pending federal coal LBA tracts (including the tracts being evaluated in the South Powder River Basin Coal EIS) include approximately 18,650 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 CBM project area discussed above. These active coal operations along the Wyodak outcrop had disturbed approximately 56,900 acres as of 2001. Approximately 14,400 of those acres of disturbance are occupied by “permanent” mine facilities, such as roads, buildings, coal handling facilities, etc., which are not available for reclamation. Of the remaining 42,500 acres of disturbance available for reclamation, approximately 23,700 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 (i.e., 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.

Cumulative effects would also occur 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 (to be 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 (at 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 LBA 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.

J-8.0 CREDENTIALS OF SURVEY PERSONNEL

BKS Environmental, Inc. of Gillette, Wyoming

Brenda K. Schladweiler

Ms. Schladweiler is the Senior Plant Ecologist and Reclamation Specialist for BKS Environmental, Inc. Ms. Schladweiler obtained a Master of Science degree in Soil Science and is currently pursuing a Doctorate Degree in Soil Science from the University of Wyoming. Ms. Schladweiler has skills in baseline soils and vegetation assessments in Wyoming and other western states. She has conducted soil assessments for National Pollution Discharge Elimination System (NPDES) discharge and land disposal of CBM production water, compiled reclamation plans for various coal, uranium, and bentonite projects and has coordinated management and monitoring for various mining and oil and gas reclamation projects.

Paige Wolken

Ms. Wolken obtained a Master of Science degree in Plant and Soil Sciences from the University of Wyoming. Ms. Wolken has accumulated nine years of field experience in identifying and mapping of sensitive (T&E) species, the collection and analysis of vegetation data for reclamation monitoring, and has conducted wetland delineation for state and private project permitting.

Heidi Smith

Ms. Smith is pursuing a Master of Science degree in Agronomy and Plant Pathology from the University of Wyoming. Ms. Smith has performed baseline studies and monitoring of reclaimed areas on open pit coal mines in the PRB for BKS since 1999.

Intermountain Resources of Laramie, Wyoming

Jim Orpet

Mr. Orpet obtained a Master of Science degree in Range Management from the University of Wyoming and has accumulated 24 years of field experience in vegetation and plant surveys. This experience includes preparation of plant species lists for over 100 projects throughout Wyoming. Mr. Orpet was qualified in 1987 by the WDEQ/LQD to conduct T&E and other plant and animal surveys on Abandoned Mine Lands (AML) projects within the state. Qualification at that time was based on review and approval of Mr. Orpet's credentials by the WGFD and the USFWS. Mr. Orpet has also completed numerous wetland surveys that have been approved by the COE.

Russel Tait

Mr. Tait obtained a Bachelor of Science degree in Wildlife Management from the University of Wyoming and has accumulated 11 years of field experience in vegetation and plant surveys in Wyoming. Mr. Tait has assisted Mr. Orpet in conducting Ute ladies'-tresses orchid surveys for over six years on coal mines and other resource development projects in Wyoming.

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 16 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 USFWS 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 10 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.

J-9.0 REFERENCES AND LITERATURE CITED

- Antelope Coal Company (ACC), 1995, 1998, 2001, and 2002, Annual Wildlife Monitoring Reports to WDEQ/LQD. Prepared for ACC by Powder River Eagle Studies/Thunderbird Wildlife Consulting, Inc.
- Bureau of Land Management (BLM), 1995, Final Environmental Assessment for the Antelope Coal Lease Application, Casper Field Office, Casper, Wyoming.
- _____, 1997, Final Environmental Impact Statement for the North Rochelle Coal Lease Application (WYW127221), Casper Field Office, Casper, Wyoming.
- _____, 1998, Final Environmental Impact Statement for the Powder River Coal Lease Application (WYW136142) and Thundercloud Coal Lease Application (WYW1361458), Casper Field Office, Casper, Wyoming.
- _____, 2000, Final Environmental Impact Statement for the Horse Creek Lease Application (WYW141435), Casper Field Office, Casper, Wyoming.
- _____, 2003, Final Environmental Impact Statement and Proposed Plan Amendment for the Powder River Basin Oil and Gas Project, Buffalo Field Office, Buffalo, Wyoming.
- Buehler, D.A., T.J. Mersmann, J.D. Fraser, and J.K.D. Seegar, 1991, Non-breeding bald eagle communal and solitary roosting behavior and roost habitat on the northern Chesapeake Bay. *Journal of Wildlife Management* 55(2): 273-281.
- Byer, Tim, 2003, USDA-FS Wildlife Biologist, Douglas Ranger District, Douglas, Wyoming, personal communication September 11 and 29, 2003.
- Clark, T.W., and M.R. Stromberg, 1987, *Mammals in Wyoming*. University of Kansas, Museum of Natural History.
- Dechant, J.A., M.L. Sondreal, D.H. Johnson, L.D. Igl, D.M. Goldade, M.P. Nennman, and B.R. Euliss, 2001, Effects of management practices on grassland birds: Mountain Plover. U.S. Geological Survey, Northern Prairie Wildlife Research Center, Jamestown, North Dakota, 15 pp.
- Dinsmore, J.J., 1983, Mountain plover (*Charadrius montanus*). Pages 185-196 in J.S. Armbruster, editor. *Impact of Coal Surface Mining on 25 Migratory Bird Species of High Federal Interest*. USFWS FWS/OBS-83/35. 348 pages.

- Ehrlich, P.R., D.S. Dobkin, and D. Wheye, 1988, *The Birder's Handbook: A Field Guide to the Natural History of North American Birds*. Simon and Schuster, New York.
- Fertig, W., and G. Beauvais, 1999, Wyoming Plant and Animal Species of Special Concern. Unpublished report. Wyoming Natural Diversity Databas, Laramie, Wyoming.
- Fitzgerald, J.P., C.A. Meaney, and D.M. Armstrong, 1994, *Mammals of Colorado*. Denver Museum of Natural History, Denver, Colorado.
- Good, R.E., D.P. Young Jr., and J. Eddy, 2002, *Distribution of Mountain Plovers in the Powder River Basin, Wyoming*. Western EcoSystems Technology, Inc. Cheyenne, Wyoming, 10 pp.
- Grenier, Martin, Wyoming Game and Fish Department, personal communication with Nancy Doelger, BLM Casper Field Office, October 14, 2003.
- Hansen, A.J., M.V. Stalmaster, and J.R. Newman, 1981, Habitat characteristics, function, and destruction of bald eagle communal roosts in western Washington. *In* R.L. Knight, G.T. Allen, M.V. Stalmaster, and C.W. Servheen, eds. *Proceedings of the Washington bald eagle symposium*. The Nature Conservancy, Seattle, Washington, 254 pp.
- Keinath, D.A. and D. Ehle, 2001, Survey for Mountain Plover (*Charadrius montanus*) on Federal Lands in the Powder River Basin. Wyoming Natural Diversity Database, University of Wyoming. Laramie, Wyoming, 17 pp.
- Keister, G.P., 1981, Characteristics of winter roosts and populations of bald eagles in Klamath Basin. M.S. Thesis. Oregon State University, Corvallis, 82 pp.
- Luce, B., A. Cerovski, B. Oakleaf, J. Priday, and L. Van Fleet, 1999, *Atlas of Birds, Mammals, Reptiles, and Amphibians in Wyoming*. Wyoming Game and Fish Department, Wildlife Division, Cheyenne, Wyoming.
- McGarigal, K., R.G. Anthony, and F.B. Isaacs, 1991, Interactions of humans and bald eagles on the Columbia River estuary. *Wildlife Monograph* 115:1-47.
- McKee, Gwyn, 2003, Wildlife Biologist, Thunder Bird Wildlife Consulting, Inc., Gillette, Wyoming, personal communication October 7, 2003.

- Oelklaus, W.F., 1989, Mountain Plover Status on Their Current Breeding Range. Unpublished report to NERCO Coal Corporation, Antelope Coal Company, Douglas, Wyoming.
- Parrish, T.L., 1988, Mountain Plover Habitat Selection in the Powder River Basin, Wyoming. M.S. Thesis, University of Wyoming, Laramie, Wyoming, 60 p.
- Steenhof, K., 1976, The ecology of wintering bald eagles in southeastern South Dakota. M.S. Thesis. University of Missouri, Columbia, 148 pp.
- Steenhof, K., S.S. Berlinger, and L.H. Fredrickson, 1980, Habitat use by wintering bald eagles in South Dakota. *Journal of Wildlife Management* 44(4): 798-805.
- University of Wyoming, 2001, Data Search for Species Listed with the Wyoming Natural Diversity Database. Letter and computer printouts from A.J. Fedder to G. McKee (TWC), dated April 16, 2001.
- U.S. Bureau of Reclamation, 1981, A survey of wintering bald eagles and their habitat in the Lower Missouri Region. Denver, Colorado, 96 pp.
- U.S. Department of Agriculture-Forest Service (USDA-FS), 2001a, Final Environmental Impact Statement for the Northern Great Plains Management Plans Revision.
- _____, 2001b, Land and Resource Management Plan for the Thunder Basin National Grassland.
- _____, 2002, Final Environmental Impact Statement and Land and Resource Management Plan Revision Record of Decision for the Thunder Basin National Grassland, July 31, 2002.
- U.S. Fish and Wildlife Service (USFWS), 1978, Management of wintering bald eagles. FWS/OBS-78/79. Washington, D.C., 59 pp.
- _____, 1986, Recovery plan for the Pacific bald eagle. Portland, Oregon, 160 pp.
- _____, 1989, Black Footed Ferret Survey Guidelines for Compliance with the Endangered Species Act. USDI Fish and Wildlife Service, Denver, Colorado and Albuquerque, New Mexico.
- _____, 1995, Ute ladies'-tresses draft recovery plan. U.S. Fish and Wildlife Service, Denver, Colorado, 46 pp.

- _____, 1999a, Proposed Threatened status for the mountain plover. Federal Register 64(30): 7587-7601.
- _____, 1999b, Extension of comment period and announcement of public hearings on proposal to list the mountain plover as a threatened species. Federal Register 64(74): 19108.
- _____, 2000a, 12-month administrative finding for a petition to list the black-tailed prairie dog from the National Wildlife Federation dated July 30, 1998. Available on the Internet at website <<http://www.r6.fws.gov/btprairiedog/>>, accessed August 22, 2000.
- _____, 2000b, 12-month finding for a petition to list the black-tailed prairie dog as threatened. Federal Register 65(24): 5476-5488.
- _____, 2001, Annual notice of findings on recycled petitions. Federal Register 66(5): 1295-1300.
- _____, 2002a, Memorandum from Mike Long, Field Supervisor, USFWS Wyoming Field Office, Cheyenne, Wyoming, to BLM Casper Field Office Manager, Casper, Wyoming, dated June 7, 2002.
- _____, 2002b, Biological and Conference Opinion for the Powder River Basin Oil and Gas Project, Campbell, Converse, Johnson, and Sheridan Counties, Wyoming, Cheyenne, Wyoming, 51 pp.
- _____, 2002c, Endangered and threatened wildlife and plants; threatened status and special regulation for the mountain plover. Federal Register 67 (234): 72396-72407.
- _____, 2003, Endangered and threatened wildlife and plants; withdrawal of the proposed rule to list the mountain plover as threatened. Federal Register 68 (174): 53083-53101.
- Wyoming Oil and Gas Conservation Commission, 2003, Personal communication between Nancy Doelger, BLM Casper Field Office, and Rick Marvel and Dave Hutton, Wyoming Oil and Gas Conservation Commission, October 22, 2003.