

APPENDIX I

BIOLOGICAL ASSESSMENT
FOR THE WEST ANTELOPE II
COAL LEASE APPLICATION EIS

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I-1.0 INTRODUCTION

On April 6, 2005, Antelope Coal Company (ACC¹) filed an application with the BLM to lease the federal coal reserves included in a maintenance coal tract under the regulations at 43 CFR 3425: Leasing on Application. Antelope Coal Company, a directly held subsidiary of Rio Tinto Energy America, operates the Antelope Mine in Campbell and Converse Counties, Wyoming. The environmental impacts of leasing the maintenance coal tract are being evaluated in the West Antelope II Coal Lease Application EIS. The tract, referred to as the West Antelope II LBA tract, and applicant mine are shown in Figures I-1 and I-2.

The purpose of this Biological Assessment is to provide information about the potential effects that leasing lands in the West Antelope II general analysis area would have on federally listed threatened or endangered species. T&E species are managed under the authority of the Endangered Species Act 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 federally listed species or result in the destruction or adverse modification of their critical habitat. 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.

This Biological Assessment was prepared to disclose the possible effects to T&E species (plant and animal) that are known to be present or that may be present within the area influenced by the Proposed Action and the alternatives to the Proposed Action being evaluated by the BLM. 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.
2. To provide a process and standard by which to ensure that threatened or endangered species receive full consideration in the decision making process.

¹ Refer to page xvi of the West Antelope II LBA EIS for a list of abbreviations and acronyms used in this document.

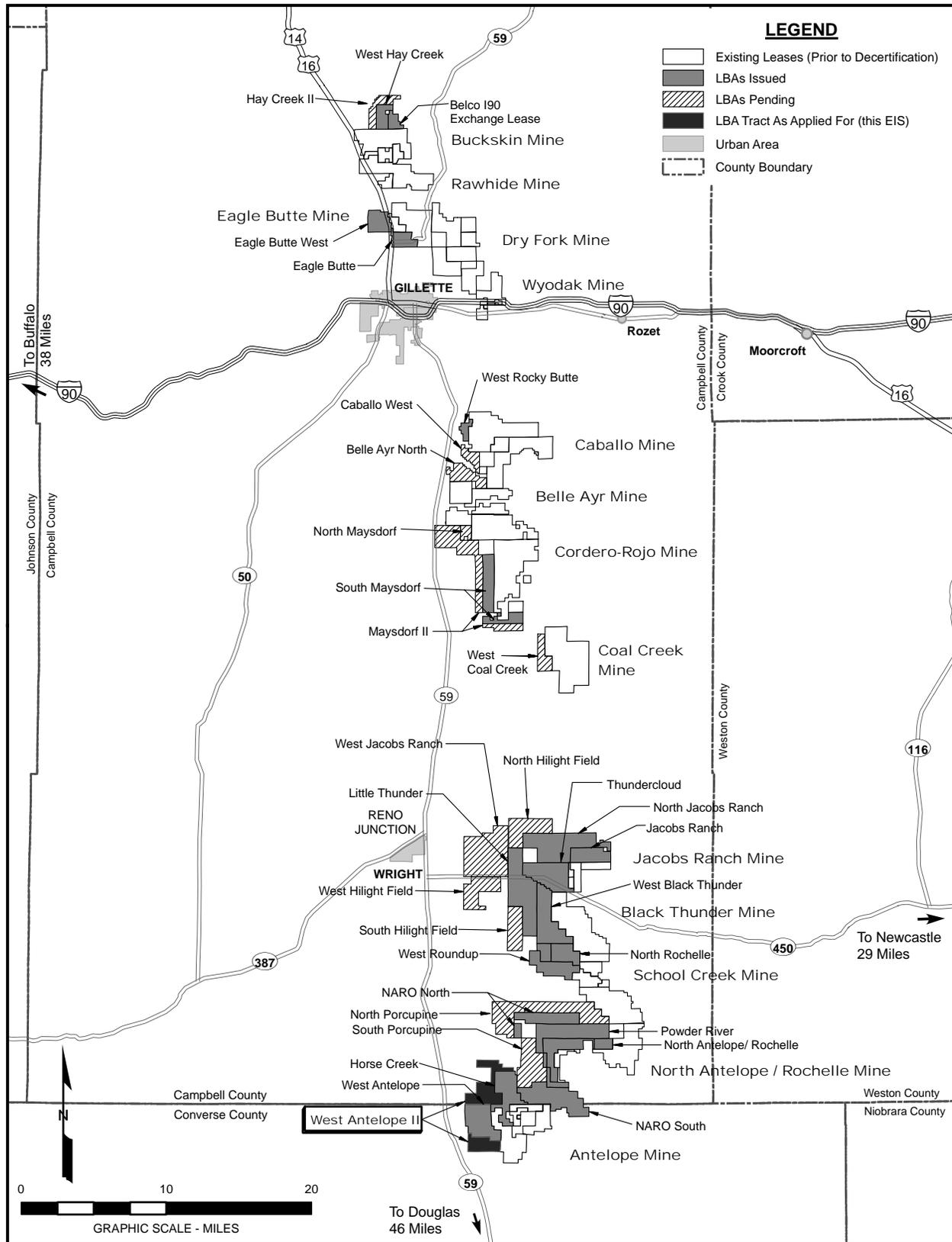


Figure I-1. General Location Map with Federal Coal Leases and LBA Tracts.

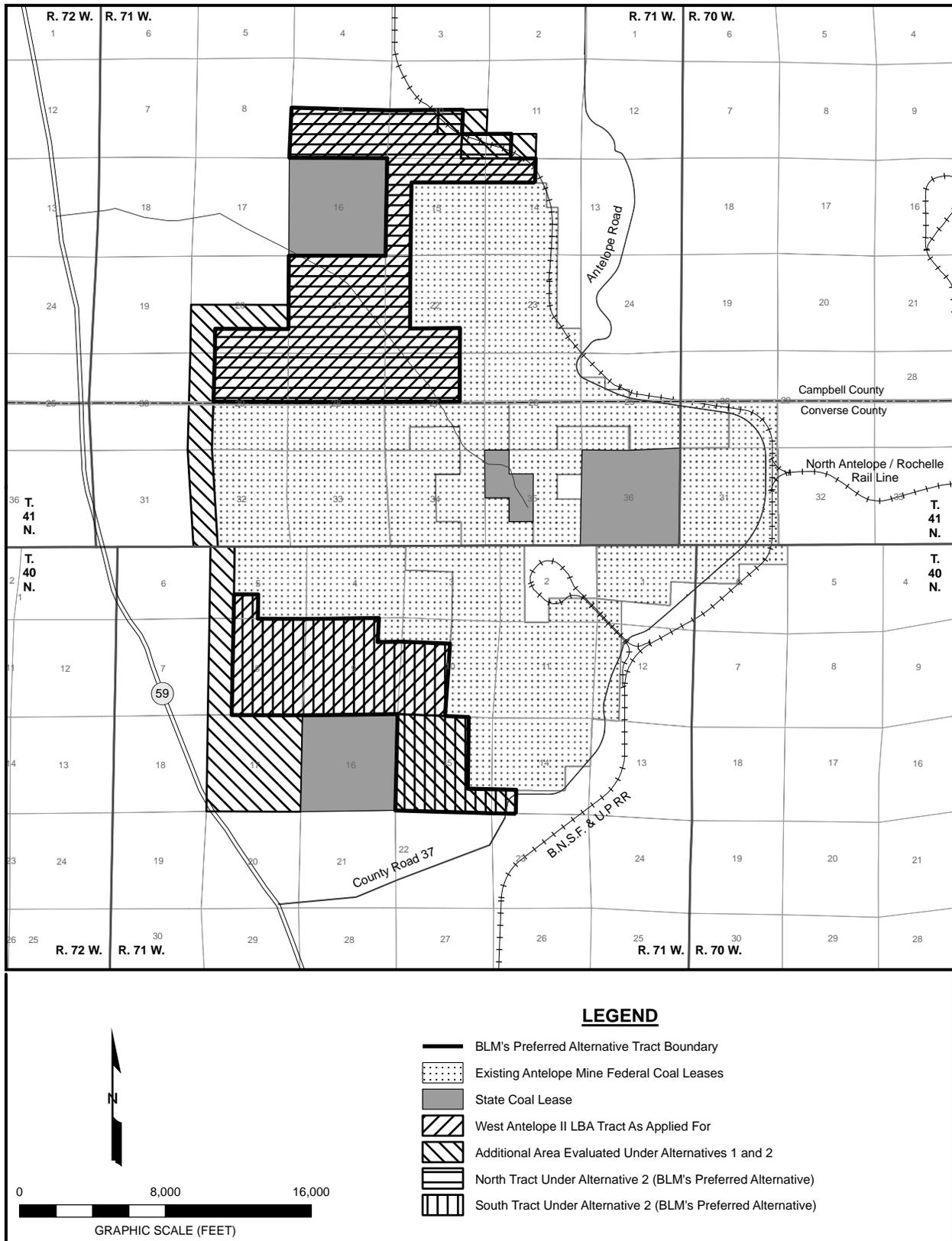


Figure I-2. West Antelope II LBA Preferred Alternative Tract Configuration.

I-2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

I-2.1 The Proposed Action

The West Antelope II LBA tract is located west of and immediately adjacent to the Antelope Mine. Under the Proposed Action, the tract would be offered for lease as applied for at a sealed-bid, competitive lease sale. The boundaries of the tract would be consistent with the tract configuration proposed by the applicant (Figure I-2). As applied for, the West Antelope II LBA tract consists of two non-contiguous blocks of federal coal. The Proposed Action assumes that AM would be the successful bidder on the tract, and that the tract would be mined as a maintenance lease for an existing mine.

The legal description of the proposed West Antelope II LBA tract coal lease lands as applied for by ACC under the Proposed Action is as follows:

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

| | |
|---|--------------|
| Section 9: Lots 9 through 16: | 330.68 acres |
| Section 10: Lots 11 through 15: | 203.00 acres |
| Section 14: Lots 3 and 4: | 82.64 acres |
| Section 15: Lots 1 through 5, 12, and 13: | 289.35 acres |
| Section 20: Lots 14 through 16: | 122.89 acres |
| Section 21: Lots 1 through 16: | 651.74 acres |
| Section 22: Lots 2, 7, 8, and 14 through 16: | 252.93 acres |
| Section 27: Lots 6 through 11: | 250.51 acres |
| Section 28: Lots 1 through 8: | 322.50 acres |
| Section 29: Lots 1 through 3 and 6 through 8: | 247.76 acres |

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

| | |
|---|--------------|
| Section 5: Lot 18: | |
| Section 8: Lots 1 through 3, 6 through 11, and 14 through 16: | 478.14 acres |
| Section 9: Lots 2 through 16: | 597.22 acres |
| Section 10: Lots 5, 6, and 11 through 14: | 238.99 acres |

Total: 4,108.60 acres

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 tract as applied for includes approximately 4,108.60 mineable acres. 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 of the tract 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 II 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 federal coal tract as applied for. The 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 a lease for the West Antelope II LBA tract are listed in Appendix D of the West Antelope II Coal Lease Application EIS. The following stipulation relating to T&E species is one of the special stipulations developed for the Wyoming PRB:

THREATENED, ENDANGERED, CANDIDATE, or OTHER SPECIAL STATUS PLANT and ANIMAL SPECIES – *The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened or endangered under the Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 et seq., or that have other special status. The Authorized Officer may recommend modifications to exploration and development proposals to further conservation and management objectives or to avoid activity that will contribute to a need to list such species or their habitat or to comply with any biological opinion issued by the Fish and Wildlife Service for the Proposed Action. The Authorized Officer will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act. The Authorized Officer may require modifications to, or disapprove a proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species, or result in the destruction or adverse modification of designated or proposed critical habitat.*

The lessee shall comply with instructions from the Authorized Officer of the surface managing agency (BLM, if the surface is private) for ground disturbing activities associated with coal exploration on federal coal leases prior to approval of a mining and reclamation permit or outside an approved mining and reclamation permit area. The lessee shall comply with instructions from the Authorized Officer of the Office of Surface Mining Reclamation and Enforcement, or his designated representative, for all ground disturbing activities taking place within an approved mining and reclamation permit area or associated with such a permit.

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 PRB (see Section I-3.0 for further discussion). As indicated in Chapter 1, Section 1.5 and Appendix B of the West Antelope II Coal Lease Application EIS, some of the above described lands in the West Antelope II LBA tract are unsuitable for mining due to the presence of the BNSF & UP railroad ROW and ROWs for State and County roads. Although the coal would not be recovered from these lands, they are included in the tract to allow maximum recovery of all the mineable coal outside of the ROWs and associated buffer zones and to comply with the coal leasing regulations, which do not allow leasing of less than 10-acre aliquot parts. A stipulation stating that no mining activity may be conducted in the portion of the lease within the ROWs will be attached if a lease is issued for this tract.

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, the coal included in the tract would be mined by existing employees, using existing facilities and roads.

I-2.2 Alternatives to the Proposed Action

I-2.2.1 Alternative 1

Under Alternative 1 for the West Antelope II LBA tract, BLM would reconfigure the tract and hold one competitive coal sale for the lands included in the reconfigured tract 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 for this tract if it is offered for sale. Alternative 1 for the West Antelope II LBA tract assumes that AM would be the successful bidder on the tract if a lease sale is held and that the federal coal would be mined as a maintenance lease for the existing Antelope Mine. Other assumptions are the same as for the Proposed Action.

As applied for, the West Antelope II LBA tract consists of two non-contiguous blocks of federal coal. In evaluating the West Antelope II coal lease application, BLM identified a study area which includes unleased federal coal adjacent to the northeastern, western, and southern edges of the tract as applied for. BLM is evaluating the potential that some or all of these lands could be added to the area to be offered for lease to provide for more efficient recovery of the federal coal, increase competitive interest in the West Antelope II LBA tract, and/or reduce the potential that some potentially mineable federal coal in this area would be bypassed if it is not included in the West Antelope II LBA tract.

Under Alternative 1, the BLM could add all or part of the following lands to the West Antelope II LBA tract as applied for:

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

| | |
|---------------------------------|--------------|
| Section 10: Lots 9, 10, and 16: | 123.42 acres |
| Section 11: Lots 13 and 14: | 85.03 acres |
| Section 20: Lots 9 through 13: | 204.29 acres |
| Section 29: Lots 4 and 5: | 81.71 acres |

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

| | |
|------------------------------------|--------------|
| Section 29: Lots 12 and 13: | 81.09 acres |
| Section 32: Lots 4, 5, 12, and 13: | 162.36 acres |

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

| | |
|--|--------------|
| Section 5: Lots 8, 9, 16, and 17: | 119.54 acres |
| Section 8: Lots 4, 5, 12, and 13: | 159.52 acres |
| Section 14: Lot 13: | 39.99 acres |
| Section 15: Lots 2 through 7, and 10 through 16: | 514.01 acres |

| | |
|--------------------------------|-----------------------|
| Section 17: Lots 1 through 16: | 629.62 acres |
| Total: | 2,200.58 acres |

The legal description of the Alternative 1 reconfiguration of the West Antelope II LBA tract is as follows:

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

| | |
|--|--------------|
| Section 9: Lots 9 through 16: | 330.68 acres |
| Section 10: Lots 9 through 16: | 326.42 acres |
| Section 11: Lots 13 and 14: | 85.03 acres |
| Section 14: Lots 3 and 4: | 82.64 acres |
| Section 15: Lots 1 through 5, 12, and 13: | 289.35 acres |
| Section 20: Lots 9 through 16: | 327.18 acres |
| Section 21: Lots 1 through 16: | 651.74 acres |
| Section 22: Lots 2, 7, 8, and 14 through 16: | 252.93 acres |
| Section 27: Lots 6 through 11: | 250.51 acres |
| Section 28: Lots 1 through 8: | 322.50 acres |
| Section 29: Lots 1 through 8: | 329.47 acres |

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

| | |
|------------------------------------|--------------|
| Section 29: Lots 12 and 13: | 81.09 acres |
| Section 32: Lots 4, 5, 12, and 13: | 162.36 acres |

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

| | |
|--|--------------|
| Section 5: Lots 8, 9, and 16 through 18: | 159.79 acres |
| Section 8: Lots 1 through 16: | 637.66 acres |
| Section 9: Lots 2 through 16: | 597.22 acres |
| Section 10: Lots 5, 6, and 11 through 14: | 238.99 acres |
| Section 14: Lot 13: | 39.99 acres |
| Section 15: Lots 2 through 7, and 10 through 16: | 514.01 acres |
| Section 17: Lots 1 through 16: | 629.62 acres |

| | |
|---------------|-----------------------|
| Total: | 6,309.18 acres |
|---------------|-----------------------|

I-2.2.2 Alternative 2 (BLM's Preferred Alternative)

Under Alternative 2 for the West Antelope II LBA tract, BLM is considering dividing the tract as applied for into two tracts and offering one or both of those tracts for sale. A separate, competitive sealed bid sale would be held for each tract that is offered for sale, and each tract would be subject to standard and special lease stipulations developed for the PRB and for that tract. Alternative 2, dividing the tract as reconfigured by BLM into two tracts and offering both for sale as separate competitive bids, is the BLM's Preferred Alternative. If the tracts are offered for lease, Alternative 2 for the West Antelope II LBA tract assumes that AM would be the successful bidder and that the federal coal

would be mined to extend the life of the existing Antelope Mine. Other assumptions would be the same as for the West Antelope II LBA tract Proposed Action.

As discussed under Alternative 1, the West Antelope II LBA tract consists of two non-contiguous blocks of federal coal. Under Alternative 2, the West Antelope II North LBA Tract would consist of the northernmost block of coal and the West Antelope II South LBA Tract would consist of the southern block of coal. BLM is dividing the tract because the northern tract would potentially be of competitive interest to more than one mine. The division would be consistent with public comments that the BLM received regarding the tract, and would also be administratively efficient given that the two tracts would be in different counties.

As discussed under Alternative 1, BLM has identified a study area which includes unleased federal coal adjacent to the northeastern, western, and southern edges of the tract as applied for. BLM is evaluating the potential that adding some or all of these lands to the area offered for lease would provide for more efficient recovery of the federal coal, increase competitive interest in the West Antelope II LBA tract, and/or reduce the potential that some of the remaining unleased federal coal in this area would be bypassed in the future. Under Alternative 2, the BLM could add all, part, or none of the study area to the West Antelope II LBA tract application area.

The lands that BLM is considering including in the north tract are:

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

| | |
|--|--------------|
| Section 9: Lots 9 through 16: | 330.68 acres |
| Section 10: Lots 9 through 16: | 326.42 acres |
| Section 11: Lots 13 and 14: | 85.03 acres |
| Section 14: Lots 3 and 4: | 82.64 acres |
| Section 15: Lots 1 through 5, 12, and 13: | 289.35 acres |
| Section 20: Lots 9 through 16: | 327.18 acres |
| Section 21: Lots 1 through 16: | 651.74 acres |
| Section 22: Lots 2, 7, 8, and 14 through 16: | 252.93 acres |
| Section 27: Lots 6 through 11: | 250.51 acres |
| Section 28: Lots 1 through 8: | 322.50 acres |
| Section 29: Lots 1 through 8: | 329.47 acres |

Total: 3,248.45 acres

The lands that BLM is considering including in the south tract are:

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

| | |
|------------------------------------|--------------|
| Section 29: Lots 12 and 13: | 81.09 acres |
| Section 32: Lots 4, 5, 12, and 13: | 162.36 acres |

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

| | |
|--|-----------------------|
| Section 5: Lots 8, 9, and 16 through 18: | 159.79 acres |
| Section 8: Lots 1 through 16: | 637.66 acres |
| Section 9: Lots 2 through 16: | 597.22 acres |
| Section 10: Lots 5, 6, and 11 through 14: | 238.99 acres |
| Section 14: Lot 13: | 39.99 acres |
| Section 15: Lots 2 through 7, and 10 through 16: | 514.01 acres |
| Section 17: Lots 1 through 16: | 629.62 acres |
| Total: | 3,060.73 acres |

The south tract includes approximately 240 acres of Thunder Basin National Grassland (TBNG) administered by the U.S. Department of Agriculture–Forest Service (USDA-FS). TBNG lands include Section 14, Lot 13 and Section 15, Lots 2, 7, 10, 15, and 16.

BLM’s preferred tract configuration is to add approximately 125 acres to the northeast corner of the north tract, as applied for, and approximately 554 acres to southeast corner of the south tract, as applied for. BLM’s preferred alternative would be to divide the West Antelope II LBA, as originally applied for, into two separate tracts and to also add the following lands:

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

| | |
|------------------------------|-------------|
| Section 10: Lots 10, and 16: | 82.22 acres |
| Section 11: Lot 14: | 42.69 acres |

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

| | |
|--|---------------------|
| Section 14: Lot 13: | 39.99 acres |
| Section 15: Lots 2 through 7, and 10 through 16: | 514.01 acres |
| Total: | 678.91 acres |

BLM’s preferred alternative includes holding separate competitive lease sales on the two divided tracts. The legal description of BLM’s preferred tract configuration for the West Antelope II LBA is as follows:

West Antelope II North TractT.41N., R.71W., 6th P.M., Campbell County, Wyoming

| | |
|--|--------------|
| Section 9: Lots 9 through 16: | 330.68 acres |
| Section 10: Lots 10 through 16: | 285.22 acres |
| Section 11: Lot 13: | 42.34 acres |
| Section 14: Lots 3 and 4: | 82.64 acres |
| Section 15: Lots 1 through 5, 12, and 13: | 289.35 acres |
| Section 20: Lots 14 through 16: | 122.89 acres |
| Section 21: Lots 1 through 16: | 651.74 acres |
| Section 22: Lots 2, 7, 8, and 14 through 16: | 252.93 acres |

Appendix I

| | |
|---|--------------|
| Section 27: Lots 6 through 11: | 250.51 acres |
| Section 28: Lots 1 through 8: | 322.50 acres |
| Section 29: Lots 1 through 3 and 6 through 8: | 247.76 acres |

West Antelope II North Tract Total: 2,878.56 acres

West Antelope II South Tract

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

| | |
|---|--------------|
| Section 5: Lot 18: | 40.25 acres |
| Section 8: Lots 1 through 3, 6 through 11, 14 through 16: | 478.14 acres |
| Section 9: Lots 2 through 16: | 597.22 acres |
| Section 10: Lots 5, 6, and 11 through 14: | 238.99 acres |
| Section 14: Lot 13: | 39.99 acres |
| Section 15: Lots 2 through 7, and 10 through 16: | 514.01 acres |

West Antelope II South Tract Total: 1,908.60 acres

West Antelope II North and South Tracts Total: 4,787.16 acres

I-2.2.3 Alternative 3

Under the West Antelope II LBA tract Alternative 3, the No Action Alternative, ACC's application to lease the coal included in the West Antelope II LBA tract would be rejected, the tract would not be offered for competitive sale at this time, 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 Antelope Mine and would not preclude an application to lease the federal coal included in the West Antelope II LBA tract in the future. Portions of the surface of the West Antelope II LBA tract would be disturbed due to overstripping to allow coal to be removed from the adjacent existing leases.

I-3.0 CONSULTATION TO DATE

The locations of the existing Antelope Mine coal leases, the existing approved mine permit area, and the West Antelope II LBA tract are shown in Figure I-2.

The Antelope Mine and West Antelope II LBA tract are included in the area determined to be "acceptable for further consideration for leasing" 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. BLM has applied these coal screens to federal coal lands in Campbell County several times, starting in the early 1980s. Most recently, in 1993, BLM began the process of reapplying these screens to federal coal lands

in Campbell, Converse, and Sheridan Counties. The results of this analysis were included as Appendix D of the 2001 *Approved Resource Management Plan for Public Lands Administered by the BLM Buffalo Field Office* (BLM 2001a), which can be viewed on the Wyoming BLM website at <http://www.wy.blm.gov> in the NEPA documents section. Consultation with the 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).

Appendix B of the West Antelope II Coal Lease Application EIS summarizes the unsuitability criteria, describes the general findings for the screening analyses discussed above, and presents a validation of these findings for the West Antelope II LBA general analysis area based on the current information.

The USFWS maintains a list of T&E and candidate species and designated critical habitat on their official website; the website includes those species found in Wyoming. USFWS updates the species list annually, or sooner if any listing changes occur. The species list on the USFWS website fulfills the obligation of the USFWS, under section 7(c) of the Endangered Species Act of 1973, to provide a list of T&E species upon request for federal actions and NEPA compliance.

According to USFWS information (USFWS 2008), two federally listed species could potentially occur in the West Antelope II general analysis area, the Ute ladies'-tresses orchid and the black-footed ferret. The effects upon these two species are described and analyzed in detail in this appendix. The USFWS list for Campbell and Converse Counties also included the following species: Blowout Penstemon (Endangered), Interior Least Tern (Endangered), Pallid Sturgeon (Endangered), Preble's Meadow Jumping Mouse (Threatened) and its Designated Critical Habitat, Western Prairie Fringed Orchid (Threatened), and the Whooping Crane (Endangered). However, habitat for these species is not present in the West Antelope II general analysis area. These species were considered, but because there is no habitat present in the general analysis area, they are not described in Appendix I. USFWS has reviewed the West Antelope II DEIS, including the Biological Assessment, and provided comment to the BLM on its content in a memorandum letter dated April 2, 2008 (see Appendix J).

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

The Antelope Mine initiated baseline investigations in 2006 expressly for the West Antelope II LBA tract. Due to its proximity to existing mines, the proposed lease area has also received extensive coverage during baseline and annual wildlife monitoring surveys for nearly 30 years. Both types of wildlife

surveys encompass a large perimeter around mine permit areas. Consequently, all but the northern third of the West Antelope II LBA tract has been included in multiple baseline studies and annual wildlife monitoring efforts associated with the Antelope Mine since the early 1980s. The wildlife monitoring was designed to meet the WDEQ/LQD, WGFD, 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 WGFD and USFWS. The monitoring programs were conducted in accordance with Appendix B of WDEQ/LQD Coal Rules and Regulations.

The approved Antelope Mine Permit 525 Term T7 includes monitoring and mitigation measures for the Antelope Mine that are required by SMCRA and Wyoming State Law. If the West Antelope II LBA tract is acquired by AM, these monitoring and mitigation measures would be extended to cover operations on the LBA tract when the Antelope Mine's mining permit is amended to include the tract. This amended permit would have to be approved before mining operations could take place on the tract. These monitoring and mitigation measures are considered to be part of the Proposed Action and the Alternatives 1 and 2 during the leasing process because they are regulatory requirements.

Background information on wildlife in the vicinity of the West Antelope II general analysis area was obtained from several sources, including the South Powder River Basin Coal FEIS (BLM 2003), records from the WGFD, BLM, USFWS, and USDA-FS, and personal contact with biologists from those four agencies. Site-specific data for the West Antelope II LBA general analysis area were obtained from several sources, including WDEQ/LQD mine permit applications and annual wildlife monitoring reports for the applicant and the neighboring North Antelope Rochelle coal mine, the FEIS for the West Antelope Coal Lease Application (BLM 2001b), the FEIS for the Horse Creek Coal Lease Application (BLM 2000), and the FEA for the Antelope Coal Lease Application (BLM 1995).

The West Antelope II LBA is dominated by rolling topography, with a few small areas of steeper and more heavily dissected terrain. The general analysis area is also characterized primarily by broken rolling hills and uplands, along with some prominent ridgelines and more level terrain along the terraces of Antelope and Spring Creeks. Surface mine lands, both active and reclaimed, dominate the landscape east and northeast of the southern portion of the tract. Elevations range from approximately 4,500 to 5,100 feet above sea level.

Predominant wildlife habitat types classified on the general analysis area correspond with the major plant communities defined during the vegetation baseline survey, and consist primarily (approximately 67 percent) of various upland grasslands. Included within those grasslands are black-tailed prairie dog (*Cynomys ludovicianus*) colonies, roughlands and coulees, and treated grazing lands ("treated grazing land" is defined in WDEQ/LQD Rules, Chapter

1, section 2 (xi)). Smaller proportions (less than 1 to approximately 17 percent) of other habitat types are also present, including big sagebrush, birdsfoot sagebrush, grassy bottomland, disturbed land, water, silver sagebrush lowland, and greasewood lowland. Mesic habitats include limited treed riparian corridors, and are restricted to narrow bands along primary drainages of Antelope Creek, Spring Creek, and Horse Creek as they pass through or adjacent to the general analysis area. Cheatgrass and crested wheatgrass have invaded some areas, and a growing network of road and well-pad disturbance areas occur in grasslands and sagebrush grasslands, especially in the north. A few oil tank batteries and increasing numbers of natural gas pipelines and facilities are also present, with pipeline disturbance corridors in varying degrees of activity and recovering vegetative cover. No designated critical, crucial, or unique habitats are present.

Antelope Creek and Spring Creek (a primary tributary of Antelope Creek) flow generally west to east across the narrow band of the West Antelope II LBA tract that connects the north and south blocks under the Action Alternatives. Horse Creek, another primary tributary of Antelope Creek, flows north to south through the northern-most extent of the LBA tract. All three drainages are classified as ephemeral streams in this area. Numerous named and unnamed ephemeral tributaries of these creeks also drain portions of the LBA tract.

Several stock reservoirs are scattered throughout those drainages, and all are constructed with earthen berms or dams. Those water bodies provide short-term habitat of variable quality for migrating waterfowl, shorebirds, and other aquatic species (birds, fish, herptiles) during spring but are less reliable, and often dry, during other seasons. Antelope's approved WDEQ/LQD mine permit allows disturbance of Spring Creek and Horse Creek, but requires a buffer of 100 feet on either side of Antelope Creek. The channels of the two tributary creeks have been, or will likely be disturbed, whereas Antelope Creek will not.

Wetland inventories were based on USFWS NWI mapping, 2006-2007 vegetation mapping in the field, and wetland inventories completed for mine permit areas within or adjacent to the general analysis area. The wetland analysis area includes the West Antelope II tract as applied for, the lands added under Alternatives, and a ¼-mile disturbance buffer for lands not located within a currently approved mine permit area. Some wetland areas previously mapped by the USFWS NWI project have been recently altered somewhat due to CBNG-related water production within and upstream of the general analysis area. Within the entire wetland analysis area (9,520.8 total acres, of which 2,115.5 acres are within the current Antelope Mine permit area), a total of approximately 42.9 acres of wetlands and Other Waters of the U.S. have been identified. Of this 42.9 acres identified, approximately 31.7 acres are vegetated wetlands and the remaining 11.2 acres are pond or channel Other Waters of the U.S. The majority of the wetlands are associated with Antelope Creek, Horse Creek, and Spring Creek stream channels. The majority of the channel Other Waters of the U.S. are associated with the ephemeral

stream channels present on the area. Non-jurisdictional wetlands or other waters of the U.S. were included in the above acreages and were not identified separately in the study area because only the COE has the authorization to make such determinations.

A formal wetland delineation has been confirmed by the COE for the wetlands and other waters in the 2,116 acres of the wetland analysis area that lie within Antelope Coal Mine's current permit area. Wetland inventories covering the remainder of the wetland analysis area have been conducted but have not yet been submitted to the COE for verification. This wetland inventory would be submitted to the COE for verification as part of the process of obtaining a surface coal mining permit. In Wyoming, once the delineation has been verified, it is made a part of the mine permit document. The reclamation plan is then revised to incorporate the replacement of at least equal types and numbers of jurisdictional wetland acreages.

Within the proposed lease area and adjacent study area, no designated critical, crucial, or unique habitats designated by USFWS for T&E species are present. The following discussion describes species' habitat requirements and their occurrence in the area of the West Antelope II LBA tract and evaluates the potential environmental effects of the Proposed Action and Alternatives 1 and 2 on federally listed species.

I-4.1 Threatened Species

I-4.1.1 Ute ladies'-tresses orchid (*Spiranthes diluvialis*)

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, 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. Ute ladies'-tresses orchids were discovered in Wyoming in 1993. It is currently known from western Nebraska, eastern Wyoming, north-central Colorado, northeastern and southern Utah, east-central and southeastern Idaho, southwestern Montana, and central Washington.

Biology and Habitat Requirements: Ute ladies'-tresses is a perennial, terrestrial orchid with erect, glandular-pubescent stems 12 to 50 cm tall arising from tuberous-thickened roots. Ute ladies'-tresses occurs primarily on moist, subirrigated or seasonally flooded soils bordering wetland meadows, springs, lakes, or perennial streams. The elevation range of known occurrences is 4,200 to 7,000 feet in alluvial substrates along riparian edges, gravel bars, old oxbows, and moist to wet meadows. Most populations are found on alluvial sand, coarse silt, or whitish loamy clay with a slightly basic pH. These soils are derived from Quaternary alluvial deposits or drab Eocene-

age sandstones and claystones (Fertig 2000). Ute ladies'-tresses is not found in heavy, tight clay soils, saline, or alkaline soils.

This orchid can be commonly associated with horsetail, milkweed, verbena, blue-eyed grass, reedgrass, goldenrod, bentgrass, and arrowgrass (USFWS 2005). Wyoming populations often occur in moist meadow communities dominated by reedtop, common quackgrass, Baltic rush, foxtail barley, or switchgrass within a narrow vegetative band between emergent aquatic vegetation and dry upland prairie (Fertig 2000). Vegetative cover tends to range from 75-90 percent and is usually less than 45 cm tall (Fertig 2000). The orchid seems intolerant of shade. Plants usually occur as small scattered groups and occupy relatively small areas within the riparian system.

In Wyoming, this species typically blooms from early August to early September, with fruits produced from mid-August to September (Fertig 2000). Leaves persist during flowering (Moseley 1998). Flowers are white or ivory and are clustered into a spike at the top of the stem. No direct observations of pollination have been made in Wyoming. In their 1994 report, Sipes and Tepedino indicated that large, long-tongued bumblebees in the genus *Bombus* are the primary pollinators in Utah and Colorado (Fertig 2000). Smaller bees may also visit these flowers, but have the incorrect body shape or mass to properly accommodate the orchid's large, sticky anther/pollen clusters (Fertig 2000).

This species reproduces basically by sexual reproduction and can produce as many as 7,300 tiny seeds per fruit (Fertig 2000). The plant requires mycorrhizal fungi to germinate and establish. Individual plants may not flower in consecutive years under adverse environmental conditions but will persist below ground with their mycorrhizal symbionts (Fertig 2000).

Flowers are needed for positive plant identification. The species can be reliably located only when it is flowering (Heidel 2001). Plants probably do not flower every year and may remain dormant below ground during drought years. In general, the species' best flowering years seem to correspond with extreme heat during flowering. Preliminary review of climate data also indicates that growing seasons that start out as relatively cold and wet correspond with low flowering levels (Heidel 2001).

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). Populations are often dynamic and "move" within a watershed as disturbances create new habitat or succession eliminates old habitat (Fertig and Beauvais 1999). Ute ladies'-tresses colonize early successional riparian habitats such as point bars, sand bars, and low-lying gravelly, sandy, or cobbly edges, persisting in those areas where the hydrology provides continual dampness in the root zone through the growing season. The orchid has been known to establish in heavily disturbed sites,

such as revegetated gravel pits, heavily grazed riparian edges, and along well-traveled foot trails on old berms (USFWS 1995).

Existing Environment: Prior to 2005, four orchid populations had been documented within Wyoming, all discovered between 1993 and 1997 (Fertig and Beauvais 1999). Four additional sites were located in 2005 and one additional site was found in 2006 (Heidel 2007). The new locations were in the same drainages or tributaries as the original four populations. Drainages with documented orchid populations include Antelope Creek and tributaries in northern Converse County, Bear Creek in northern Laramie and southern Goshen Counties, Horse Creek in Laramie County, and Niobrara River in Niobrara County. No occurrences have been recorded in Campbell County or in the West Antelope II general analysis area in Converse County.

Areas of suitable habitat within the West Antelope II LBA tract and adjacent study area were surveyed by Intermountain Resources on August 16-17 of 2006; July 25-27, August 3-5, and August 16-19 of 2007; and August 4, 5, 18, and 19 of 2008. Surveys were also conducted on portions of these areas in 1997, 1998, 1999 and 2004. The Ute ladies'-tresses orchid was not found during any of these surveys.

Topographical and wetland delineation maps for the study area were reviewed to identify all potential 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 involved walking entire lengths of the drainages documenting locations of potential habitat and searching for this species.

Most of the suitable habitat within the West Antelope II LBA tract and adjacent study area is found along Antelope Creek, Horse Creek, and Spring Creek. These drainages, which flow generally from west to east through portions of the West Antelope II LBA tract, are classified as ephemeral streams in this area. Limited portions of these drainages may receive recharge from bank storage making them locally intermittent. In response to surface discharge of groundwater associated with CBNG development on or upstream of the West Antelope II LBA tract, which is a relatively recent phenomenon, streamflow occurrence is now more persistent and some drainage channels are seldom completely dry. Several unnamed and named ephemeral tributaries of these creeks also drain portions of the West Antelope II LBA tract. There are also several stock reservoirs on the tract. The stock reservoirs are present on these ephemeral drainages and all are constructed earthen berms or dams. These ponds generally contain water only in early spring, then dry up in summer.

There is a total of approximately 42.9 acres of wetlands and Other Waters of the U.S., including approximately 31.7 acres of vegetated wetlands and 11.2 acres of pond or channel Other Waters of the U.S. within the West Antelope II general analysis area.

No Ute ladies'-tresses orchids were found during the 1997, 1998, 2004, 2006, 2007, or 2008 surveys conducted in potential habitats on the West Antelope II general analysis area (Intermountain Resources 2007, 2008).

According to the USFWS 2005 Rangewide Status Review of Ute Ladies'-tresses (Fertig et al. 2005), the number of populations, geographic ranges, acreages, and estimated population sizes of this species has increased significantly since it was listed in 1992. Much of this can be attributed to increased survey and project clearance work over much of the western United States and heightened awareness of the plant due to its protected status. When the orchid was listed as threatened in 1992, it had an estimated population size of 6,000 individuals. In 2005, additional survey work estimated the number of plants to be over 83,300. USFWS determined that a petition to remove the orchid from federal protection under the Endangered Species Act provided substantial biological information which indicated that removal may be warranted. As of December, 2005, the Service is moving forward with the proposal to delist Ute ladies'-tresses.

Effects of the Proposed Project: **Mining the federal coal included in the West Antelope II general analysis area, if the tract is leased under the Proposed Action or Alternatives, may affect, but is not likely to adversely affect Ute ladies'-tresses.** Potential habitat for this species is currently present on the tract along Antelope Creek, Horse Creek, and Spring Creek. If lands in the general analysis area are leased, Spring Creek and Horse Creek would be mined, but Antelope Creek would have a 100-foot no-disturbance buffer zone on either side of its banks, as is presently stipulated in the WDEQ/LQD mine permit. Outside of these drainages, potential 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 Ute ladies'-tresses.

The nearest known Ute ladies'-tresses population is located on an Antelope Creek tributary approximately 20 miles upstream of the project area. As described earlier, Antelope Mine has conducted multiple orchid surveys over multiple years during the known time of flowering using USFWS accepted techniques. All surveys have resulted in negative findings.

Although individual plants of this species do not necessarily produce annual flowering stalks nor above-ground growth consistently from year to year, it is unlikely that Ute ladies'-tresses populations would have remained undetected during multiple surveys over multiple years, if they were present in the area. Nonetheless, if undetected populations were present on Horse Creek or Spring Creek in the general analysis area, they would be lost due to surface disturbing

activities. However, Antelope Creek would have a stipulated 100-foot no disturbance buffer zone on either side of its banks and that area would not be mined. If there were undetected Ute ladies'-tresses orchids in that locality, they would remain in place.

Jurisdictional wetlands located in the West Antelope II 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. 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. Replacement of non-jurisdictional and functional wetlands may be required by the surface land owner and/or WDEQ/LQD. WDEQ/LQD allows and sometimes requires mitigation of non-jurisdictional wetlands affected by mining, depending on the values associated with the wetland features. WDEQ/LQD also requires replacement of playas with hydrologic significance.

Cumulative Effects: Alterations of stream morphology and hydrology are believed to have extirpated Ute ladies'-tresses from most of its historical range (USFWS 2002). Disturbance and reclamation of streams by surface coal mining may alter stream morphology and hydrology. The large quantities of water produced from CBNG development and water discharge on the surface may also alter stream morphology and hydrology.

I-4.2 Endangered Species

I-4.2.1 Black-footed ferret (*Mustela nigripes*)

The black-footed ferret, a nocturnal mammal and an obligate associate of prairie dogs (*Cynomys* spp.), was listed as endangered in March, 1967. This species is thought to have historically inhabited a nearly contiguous matrix of prairie dog colonies spanning the short-grass prairies of the eastern and southern Rockies and the Great Plains of North America (Forrest et al. 1985). Since the early 1930s, numerous factors have led to substantial declines in prairie dog colonies in that region. Reductions in some states are estimated as high as 90% from formerly occupied colonies (Rose 1973, Tyler 1968).

Conversion of grasslands to agricultural landscapes, eradication of prairie dogs, and diseases such as the plague and canine distemper have resulted in severe reductions in prairie dog colonies across the west, colonies which provided food, shelter, and habitat for black-footed ferrets. This species of ferret is currently one of the most endangered mammals in North America and was thought to be extinct until a small population was discovered in Meeteetse, Wyoming in September, 1981. Since then, successful captive breeding and reintroduction programs have released black-footed ferrets back into the wild

in several western and Great Plains states including Wyoming, Montana, South Dakota, Colorado, Utah, and Arizona.

Biology and Habitat Requirements: Ferrets rely on prairie dogs to provide both shelter and food (Hillman and Clark 1980). Ferrets produce one litter per year, typically giving birth to four or five kits. The decline in ferret populations has been largely attributed to the reduction in the vast prairie dog colonies that historically existed in the western United States. Despite extensive ferret surveys over the past 20 plus years throughout Wyoming, the last known wild black-footed ferret population was discovered near Meeteetse in 1981 (Miller et al. 1996). Those surveys included numerous USFWS-approved clearances for coal mining and other development in the Powder River Basin of Wyoming, as well as USDA-FS surveys for ferrets on the TBNG. Reintroduction efforts involving captive bred individuals have successfully established one black-footed ferret population in the Shirley Basin area in south-central Wyoming. Currently, this is the only known black-footed ferret population within the state, though other populations are present elsewhere in the United States and Mexico.

Existing Environment: Few ferrets have historically been recorded in locations away from prairie dog colonies. The Antelope Mine and West Antelope II general analysis area are beyond the focus area for ferret reintroduction efforts on the nearby TBNG and elsewhere in the general region (USDA-FS 2002, Grenier 2003). While the EIS study area and its perimeter harbor some small prairie dog colonies, black-footed ferrets have never been documented at the mine, nor the surrounding region, during surveys conducted over the last 20 plus years by a variety of private, state, and federal entities. No black-footed ferret observations or scat have been documented in the general analysis area. On February 2, 2004, the USFWS declared that surveys for black-footed ferrets were no longer required in black-tailed prairie dog colonies throughout Wyoming (USFWS, 2004).

Currently, four black-tailed prairie dog colonies encompassing a total of approximately 188 acres overlap or are located within the West Antelope II general analysis area. Twelve additional colonies exist within 2.0 miles of the general analysis area. Seventy-five percent of the 16 colonies average 10 acres in size; four colonies exceed 25 acres. Three of the four colonies that intersect all or some portion of the general analysis area were occupied during 2006. Two of those four colonies meet the 80-acre minimum requirement for black-footed ferret habitat (USFWS 1989), but none of the colonies meet the 120-acre minimum threshold for supporting a breeding female ferret and her litter (Forrest et al. 1985).

In 2008, at Antelope Mine's request, the Wyoming Game and Fish Commission reviewed and amended their policy regarding the relocation of black-tailed prairie dogs for the creation of mountain plover habitat. The previous WGFD policy required that the mine obtain written permission of adjacent landowners

within a four mile radius of the release site before any black-tailed prairie dog relocation could occur. The 2008 approved amendment replaced the former rule and established that black-tailed prairie dog relocation could occur once the mine provided written notification to adjacent landowners within a four mile radius of the release site. One of Antelope Mine's specific reclamation objectives is to restore several black-tailed prairie dog communities that have had documented mountain plover nesting activity and have been impacted by mining.

In addition to these efforts, the Antelope Mine has worked cooperatively with the USFWS Ecological Services Office in Cheyenne to incorporate species-specific protective measures into its state mining permit. Through a successful translocation program implemented in 2002 and 2003, the mine has established a small prairie dog colony in reclamation in an area historically used by mountain plovers. That colony is approximately 1.0 mile northeast of the USDA-FS general analysis area and 1.1 miles northeast of the Section 15 prairie dog colony, where plovers are known to periodically nest. The reclamation colony is monitored annually.

Effects of the Proposed Project: **Mining the federal coal included in the West Antelope II general analysis area, if the tract is leased under the Proposed Action or Alternatives, would have no effect on black-footed ferrets.** Given the documented absence of black-footed ferrets in the region, including the general analysis area during specific surveys for this species, the small size of most colonies within the LBA and surrounding area, the block clearance issued by USFWS for black-tailed prairie dog colonies throughout the entire state, and the distance of the LBA area from future reintroduction sites, mining the West Antelope II general analysis area would not affect black-footed ferrets.

Mine activities include, but are not limited to, large-scale topsoil stripping, the intense presence of heavy machinery, extended human presence, loud noise and various linear disturbances such as roads, power lines and fences. Additionally, ongoing disturbance (grazing, oil and gas production, etc.) from sources unrelated to mining would likely continue, with some activities occurring within prairie dog colonies in the area. These activities would result in less habitat disturbance than surface mining, but physical disturbance would occur.

Based on more than 20 years of historic and recent survey efforts and other general analysis area data and information, it is unlikely that ferrets exist in the West Antelope II general analysis area.

Cumulative Effects:

As indicated, coal mining and natural gas development have occurred in the general analysis area for more than 20 years, with activities expected to increase in the immediate future. Leasing and mining lands in the West

Antelope II general analysis area would not contribute to cumulative adverse effects to black-footed ferrets within either the general analysis area or the region. No black-footed ferret populations exist within northeastern Wyoming or the TBNG. The USFWS issued a block clearance for this species in black-tailed prairie dog colonies throughout Wyoming. The general analysis area and surrounding perimeter are beyond the focus area for future ferret reintroduction efforts on the TBNG and in the general region (USDA-FS 2002, Grenier 2003). Furthermore, the proposed Action and Alternatives 1 and 2 would not conflict with any future objectives to manage the area for, or reintroduce black-footed ferrets into, the TBNG.

I-5.0 SUMMARY OF DETERMINATIONS

Table I-1 summarizes the determinations for federally listed T&E species in the West Antelope II general analysis area that may result from implementing the Proposed Action or Alternatives 1 and 2.

Table I-1. Effects Determination of Federal T&E Species in the West Antelope II General Analysis Area.

| Status | Species Common Name | Potential Effects |
|---------------|----------------------------|--------------------------|
| Threatened: | Ute ladies'-tresses | May affect ¹ |
| Endangered: | Black-footed ferret | No effect |

¹ Not likely to adversely affect individuals or populations.

I-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 non-federal 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 state laws and regulations are no less stringent than, meet the minimum requirements of, and include all applicable provisions of SMCRA.

If lands within the West Antelope II general analysis area are 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, such as the West Antelope II LBA tract, 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 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 which 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: 1) minimize electrocution hazards to raptors; 2) locate and operate haul and access roads to avoid or minimize impacts on important fish and wildlife species; and 3) design fences, conveyors, and other potential barriers to permit passage of large mammals.

USFWS Section 7 consultation would be required prior to approval of the mining and reclamation plan modification. Additional 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.

The following is a partial list of measures related to federally protected species that are required as part of the mining and reclamation permits:

- avoiding bald eagle disturbance;
- restoring bald eagle foraging areas disturbed by mining;
- using raptor safe power lines; and
- surveying for Ute ladies'-tresses if habitat is present.

I-7.0 CUMULATIVE IMPACTS

Existing habitat-disturbing activities in the PRB include surface coal mining; conventional oil, 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, construction, agricultural activities, and urban development tend to have more intense impacts on fairly localized areas, while ranching, recreational activities, and oil and gas development can be less intensive locally but tend to 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 T&E plant and animal species. In the long term, habitat is being and will continue to be restored as reclamation proceeds.

BLM has recently completed a regional technical study of current and proposed or potential development activity in the PRB to help the agency evaluate the impacts of coal development in the PRB. The *Powder River Basin Coal Review* consisted of three tasks: Task 1 updated the BLM's 1996 status check for coal development in the PRB, Task 2 developed a forecast of reasonably foreseeable development in the PRB through the year 2020, and Task 3 predicted cumulative impacts that would be expected to occur as a result of the projected development. The information about existing development in the following paragraphs is taken from the *Powder River Basin Coal Review* Task 2 report (BLM 2005) and BLM lease records. The project area for the coal review encompassed over eight million acres and included all of Campbell, Sheridan, and Johnson Counties and the northern portion of Converse County in northeastern Wyoming.

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. As of 2003, an estimated 187,761 acres had been disturbed in the coal

review project area as a result of oil and gas development activities, but approximately 115,045 acres of that disturbance has been reclaimed. This includes conventional oil and gas and CBNG wells and associated facilities and major transportation pipelines.

BLM estimates that the existing federal coal leases in the Wyoming PRB include approximately 121,185 acres. The currently pending federal coal LBA tracts (including the West Antelope II LBA tract) include approximately 39,223 additional 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 current and proposed federal coal leases are concentrated near the outcrop of the Wyodak coal bed, which is located in eastern Campbell County and the extreme northeastern edge of Converse County.

As of 2003, the surface coal mining operations along the Wyodak outcrop had disturbed approximately 68,794 acres. Approximately 24,097 of those disturbed acres were occupied by “permanent” mine facilities, such as roads, buildings, coal handling facilities, etc., which are not available for reclamation until after coal mining operations end. Of the remaining 44,697 acres of disturbance available for reclamation, approximately 21,238 acres had been reclaimed.

The *Powder River Basin Coal Review* identified an estimated 4,891 additional acres of coal-related development disturbance (i.e., coal-fired power plants, railroads, and coal technology projects) as of 2003.

The estimated total development-related disturbance in the Wyoming PRB in 2003 was 264,704 acres. In addition to the coal and oil and gas development discussed above, this total includes other types of development disturbance, such as reservoirs and industrial fabrication firms, as well as public and private infrastructure, such as highways and roads, government buildings, and residential and commercial real estate development. It should be noted that some of these disturbances overlap one another. In such cases, the disturbance acreage is counted separately under each category, but is not counted twice in determining the total area of disturbance.

Cumulative effects would also occur to T&E plant and animal 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 animals 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 animal habitat composition and distribution.

Potential adverse effects to federally protected 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 West Antelope II LBA tract, if it is leased as proposed, and after required detailed plans to mine the coal and reclaim the mined-out areas are developed and approved.

I-8.0 CREDENTIALS OF SURVEY PERSONNEL

Intermountain Resources of Laramie, Wyoming

Jim Orpet

Mr. Orpet has a Masters degree in Range Management and a Bachelors degree in Wildlife Management from the University of Wyoming with over 30 years of natural resource field survey and report preparation experience in the state of Wyoming. Mr. Orpet has completed well over 125 vegetation and T&E surveys in Wyoming and adjacent states. Surveys were completed for all types of resource development projects from detailed site specific seasonal field survey and data analysis to regional evaluations. Mr. Orpet was qualified in 1987 by the WDEQ/LQD to conduct T&E and other plant and animal surveys on Abandoned Mine Land (AML) projects in the state of Wyoming. Qualification was based on the review of Mr. Orpet's experience by the WGFD and USFWS. Mr. Orpet has also completed well over 50 wetland inventories and 150 wildlife baseline studies.

Russel Tait

Mr. Tait has a Bachelors degree in Wildlife Management, with a minor in Range Management from the University of Wyoming with 17 years of natural resource field survey and reporting experience in the state of Wyoming. Mr. Tait has completed well over 80 vegetation and T&E surveys in Wyoming. Surveys were completed for all types of resource development projects from detailed site specific seasonal field survey and data analysis to regional evaluations. Mr. Tait has located, identified and documented specific T&E plant species in the field. Well over 90 wildlife field inventories have also been completed by Mr. Tait.

Thunderbird Wildlife Consulting 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 19 years of professional experience, with the last twelve 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 Master 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 12 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.

I-9.0 REFERENCES AND LITERATURE CITED

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