

APPENDIX H

USDA-FS REGION 2 SENSITIVE SPECIES AND
MANAGEMENT INDICATOR SPECIES
AND
BLM SENSITIVE SPECIES EVALUATION FOR THE
WEST ANTELOPE II COAL LEASE APPLICATION EIS

BLM SENSITIVE SPECIES EVALUATION

INTRODUCTION

BLM¹ Wyoming has prepared a list of sensitive species to focus species management efforts towards maintaining habitats under a multiple use mandate. The authority for this policy and guidance comes from the Endangered Species Act (ESA), as amended; Title II of the Sikes Act, as amended; the Federal Land Policy Management Act of 1976 (FLPMA) (43 U.S.C. 1716); Department Manual 235.1.1A; and BLM Manual 6840.06 E. Sensitive Species.

The goals of the sensitive species policy are to:

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

PROJECT DESCRIPTION

Under the Proposed Action, BLM would hold a competitive lease sale and issue a lease for the federal coal lands included in the West Antelope II LBA tract as applied for or under other Alternatives (see Figure 2-1 and land descriptions in Section 2.1 of this EIS). It is assumed that the applicant for the tract, Antelope Coal Company, would be the successful bidder and that the tract would be mined as a maintenance lease for the existing Antelope Mine. The surface estate on the West Antelope II LBA tract as applied for is composed of privately owned lands. Under Alternatives 1 and 2, additional lands, including federal lands managed by USDA-FS, were added by BLM to be analyzed for possible inclusion in that tract. Hereafter, the BLM study area for the West Antelope II LBA tract is defined as the original tract, as applied for, plus all lands added by the BLM. The general analysis area for the West Antelope II LBA tract is defined as the BLM study area plus surrounding lands within a one-quarter miles perimeter that could be disturbed by mining the coal within the BLM study area. The general analysis area for the West Antelope II LBA tract does not include land within the mine's current permit area.

SPECIES OCCURRENCE AND HABITAT DESCRIPTIONS

Sensitive species were listed for their ranges within the BLM Buffalo and Casper Field Offices. Some sensitive species could or do occur within the West

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

Antelope II LBA tract. Specialized habitat requirements (i.e., caves, cliffs, calcareous rock outcrops) make occupation for other sensitive species unlikely. Table H-1 lists BLM sensitive species, summarizes their habitat requirements, and indicates if they have been observed on or around the tract. Additional information on occurrences of these species on the tract can be found in Section 3.10 of the West Antelope II Coal Lease Application EIS.

USDA-FS REGION 2 SENSITIVE AND MANAGEMENT INDICATOR SPECIES

Species that have been identified by the Regional Forester as sensitive species and Management Indicator Species (MIS) must be considered for the West Antelope II Coal Lease Application because Alternatives 1 and 2 include additional federal lands administered by the USDA–Forest Service. The purpose of this section of this Appendix is to provide information about the potential environmental effects that leasing the USDA-FS administered lands would have on USDA-FS Region 2 Sensitive wildlife and vegetative species (terrestrial and aquatic) and on USDA-FS Thunder Basin National Grassland Forest Plan MIS.

USDA-FS REGION 2 SENSITIVE SPECIES

The USDA-FS classifies species as “Sensitive” when they meet one or more of the following three criteria: 1) the species is declining in numbers or occurrences, and evidence indicates it could be proposed for federal listing as threatened or endangered if action is not taken to reverse or stop the downward trend; 2) the species’ habitat is declining and continued loss could result in population declines that lead to federal listing as threatened or endangered if action is not taken to reverse or stop the decline; and 3) the species’ population or habitat is stable but limited. In addition to these criteria, a ranking system is used to identify species for Sensitive status, which is outlined in USDA-FS Manual 2670-2671. Table H-2 lists species that have been identified as “Sensitive” for USDA-FS Region 2 (USDA-FS 2007). This table also provides information about the status of the species on the TBNG as a whole (not exclusive to the TBNG within the West Antelope II general analysis area).

The USDA-FS Douglas Ranger District has reviewed the entire list of animal and plant sensitive species for USDA-FS Region 2 and eliminated from further review those species that occur on the TBNG but are geographically or biologically outside of any effects of the proposal. Table H-3 presents species status and suitable habitat information specific only to the 240 acres of USDA-FS lands in the West Antelope II general analysis area. These species have been identified as definitely or potentially inhabiting the general analysis area, either seasonally or year-round, and therefore may be potentially affected by the Proposed Action or Alternatives. The species listed in Table H-3 were evaluated for potential effects from the Proposed Action and Alternatives.

Appendix H

Table H-1. BLM Sensitive Species for the Buffalo and Casper Field Offices and Habitat Requirements and Observations within the West Antelope II General Analysis Area.		
Common Name (scientific name)	Habitat	Observed within West Antelope II LBA General Analysis Area
Amphibians		
Northern leopard frog (<i>Rana pipiens</i>)	Beaver ponds, permanent water in plains and foothills	Infrequent Records During Annual Wildlife Surveys
Spotted frog (<i>Rana pretiosa</i>)	Ponds, sloughs, small streams	---- ¹
Birds		
Baird's sparrow (<i>Ammodramus bairdii</i>)	Grasslands, weedy fields	No
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Riparian areas, rangelands	Migrant, Winter Resident/Forager
Brewer's sparrow (<i>Spizella breweri</i>)	Basin-prairie shrub	Limited Breeder ¹
Burrowing owl (<i>Athene cunicularia</i>)	Grasslands, basin-prairie shrub	Periodic Breeder
Ferruginous hawk (<i>Buteo regalis</i>)	Basin-prairie shrub, grasslands, rock outcrops	Common Breeder
Greater sage-grouse (<i>Centrocercus urophasianus</i>)	Basin-prairie shrub, mountain-foothill shrub	Rare ¹
Loggerhead shrike (<i>Lanius ludovicianus</i>)	Basin-prairie shrub, mountain-foothill shrub	Infrequent Breeder
Long-billed curlew (<i>Numerius americanus</i>)	Grasslands, plains, foothills, wet meadows	Uncommon Potential Breeder
Mountain Plover (<i>Charadrius montanus</i>)	Shortgrass/midgrass grasslands, basin-prairie shrubs	Common Breeder
Northern goshawk (<i>Accipiter gentilis</i>)	Conifer and deciduous forests	---- ¹
Peregrine falcon (<i>Falco peregrinus</i>)	Cliffs along waterways	No
Sage sparrow (<i>Amphispiza billneata</i>)	Basin-prairie shrub, mountain-foothill shrub	No
Sage thrasher (<i>Oreoscoptes montanus</i>)	Basin-prairie shrub, mountain-foothill shrub	No ¹
Trumpeter swan (<i>Cygnus buccinator</i>)	Lakes, ponds, rivers	---- ¹
White-faced ibis (<i>Plegadis chihi</i>)	Marshes, wet meadows	---- ¹
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	Open woodlands, streamside willow and alder groves	No ¹

Table H-1. BLM Sensitive Species for the BLM Buffalo and Casper Field Offices and Habitat Requirements and Observations within the West Antelope II General Analysis Area (Continued).		
Common Name (scientific name)	Habitat	Observed within West Antelope II LBA General Analysis Area
Fish		
Yellowstone cutthroat trout (<i>Oncorhynchus clarki</i>)	Cold water streams and lakes	----1
Mammals		
Fringed myotis (<i>Myotis thysanodes</i>)	Conifer forests, woodland chaparral, caves and mines	----1
Long-eared myotis (<i>Myotis evotis</i>)	Conifer and deciduous forest, caves and mines	----1
Spotted bat (<i>Euderma maculatum</i>)	Cliffs over perennial water, basin-prairie shrub	----1
Swift fox (<i>Vulpes velox</i>)	Grasslands	Infrequent Sightings During Recent Annual Wildlife Surveys
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	Forests, basin-prairie shrub, caves and mines	----1
White-tailed prairie dog (<i>Cynomys leucurus</i>)	Basin-prairie shrub, grasslands	No
Plants		
Laramie Columbine (<i>Aquilegia laramiense</i>)	Crevices of granite boulders & cliffs; 6,400-8,000 ft. elev.	----1
Northern Arnica (<i>Arnica lonchophylla</i>)	Open woods and slopes on sandy-gravel or limestone and shady, moist north-facing birch-hazelnut forests; 6500-8000 ft. elev.	----1
Porter's sagebrush (<i>Artemisia porteri</i>)	Sparsely vegetated badlands of ashy or tuffaceous mudstone and clay slopes; 5,300 to 6,500 ft. elev.	----1
Soft Aster (<i>Aster mollis</i>)	Sagebrush grasslands and mountain meadows on deep, calcareous soils at the edge of aspen or pine woodlands; 6400-8500 ft. elev.	----1
Nelson's Milkvetch (<i>Astragalus nelsonianus</i> -or- <i>Astragalus pectinatus</i> var. <i>platyphyllus</i>)	Alkaline clay flats, shale bluffs and gullies, pebbly slopes, and volcanic cinders in sparsely vegetated sagebrush, juniper, & cushion plant communities; 5200-7600 ft. elev.	----1
Many-stemmed Spider-flower (<i>Cleome multicaulis</i>)	Semi-moist, open saline banks of shallow ponds & lakes with baltic rush & bulrush; 5,900 ft. elev.	----1

Table H-1. BLM Sensitive Species for the Buffalo and Casper Field Offices and Habitat Requirements and Observations within the West Antelope II General Analysis Area (Continued).		
Common Name (scientific name)	Habitat	Observed within West Antelope II LBA General Analysis Area
Plants (Continued)		
William's wafer parsnip (<i>Cymopterus williamsii</i>)	Open ridgetops and upper slopes with exposed limestone outcrops or rockslides; 6,000 to 8,300 ft. elev.	---- ¹
Mountain Lady's Slipper (<i>Cypripedium montanum</i>)	Shady moist forests and riparian shrublands; 5400-5500 ft. elev.	---- ¹
Rabbit Buckwheat (<i>Eriogonum brevicaulum</i> var. <i>canum</i> [E. <i>Lagopus</i>])	Barren sandy or clay soils and rock outcrops in juniper woodlands and sagebrush steppe communities; 3800-5500 ft. elev.	---- ¹
Hall's Fescue (<i>Festuca hallii</i>)	Meadows, slopes, and open woods; 7400-10,500 ft. elev.	---- ¹
Contracted Indian Ricegrass (<i>Oryzopsis contracta</i> [O. <i>hymenoides</i> var. <i>c.</i>])	Basin and foothill areas on dry, sandy soils; 4800-7500 ft. elev.	No
Alpine Feverfew (<i>Parthenium alpinum</i> [Bolophyta <i>alpina</i>])	Rocky ridges and hills, flat areas with rocky pavement, gravelly loam and sandy slopes on plains, often in association with limestone	---- ¹
Cary's Beardtongue (<i>Penstemon caryi</i>)	Calcareous rock outcrops and rocky soil within sagebrush, juniper, Douglas fir, and limber pine communities; 5200-8500 ft. elev.	---- ¹
Devil's Gate Twinpod (<i>Physaria eburniflora</i>)	Rocky hills and slopes, usually limestone	---- ¹
Northern Blackberry (<i>Rubus arcticus</i> ssp. <i>acaulis</i> [R. <i>acaulis</i>])	Boggy woods and marshes; 7000-9000 ft. elev.	---- ¹
Ute Ladies' Tresses (<i>Spiranthes diluvialis</i>)	Moist, subirrigated or seasonally flooded soils bordering wetland meadows, springs, lakes, or perennial streams; 4,200-7,000 ft. elev.	No
Laramie False Sagebrush (<i>Sphaeromeria simplex</i>)	Cushion plant communities on rocky limestone ridges & gentle slopes; 7,500-8,600 ft. elev.	---- ¹
Hapeman's Sullivan (<i>Sullivania hapemanii</i> var. <i>hapemanii</i>)	Moist calcareous outcrops and boulders in shady canyons and streams; 4600-8200 ft. elev.	---- ¹

¹ Habitat generally lacking or very limited

Table H-2. USDA-FS Region 2 Sensitive Species List and Status for the entire Thunder Basin National Grassland (USDA-FS 2007).		
Status Code: K = Known occurrence in vicinity. Date of last observation indicates that species still occur in area. N = No recent observations; surveys recently completed; may be historic records; potential habitat possible. S = Suspected occurrence. May be historic records but no recent observations. Suitable habitat likely. U = Unknown occurrence, more surveys may be needed, may be historic records, potential habitat possible.		
Scientific Name	Common Name	Status on TBNG
Plants: Ferns and Allies		
<i>Botrychium ascendens</i>	Trianglelobe moonwort	U
<i>Botrychium campestre</i>	Prairie moonwort	S
<i>Botrychium furcatum</i>	Forkleaved moonwort	U
<i>Botrychium lineare</i>	Narrow-leaved moonwort	S
<i>Botrychium paradoxum</i>	Peculiar moonwort	U
<i>Lycopodium complanatum</i>	Crowfoot clubmoss	U
<i>Selaginella selaginoides</i>	Northern spike-moss	U
Plants: Monocots		
<i>Amerorchis rotundifolia</i>	Round leaved orchid	U
<i>Calochortus flexuosus</i>	Weakstem mariposalily	U
<i>Carex alopecoidea</i>	Foxtail sedge	S
<i>Carex diandra</i>	Lesserpanicled sedge	U
<i>Carex livida</i>	Livid sedge	U
<i>Cypripedium montanum</i>	Mountain lady's slipper	U
<i>Cypripedium parviflorum</i>	Smallyellow ladyslipper	U
<i>Eleocharis elliptica</i>	Elliptic spikerush	S
<i>Epipactis gigantea</i>	Giant helle borine	U
<i>Eriophorum altaicum</i> var. <i>neogaeum</i>	Altai cottongrass	U
<i>Eriophorum chamissonis</i>	Chamisso cottongsedge	U
<i>Eriophorum gracile</i>	Slender cottongsedge	U
<i>Festuca hallii</i>	Hall's Fescue	S
<i>Kobresia simpliciuscula</i>	Simple Kobresia	U
<i>Liparis loeselii</i>	Loesel's twayblade	U
<i>Malaxis brachypoda</i>	Adder's-mouth	U
<i>Platanthera orbiculata</i>	Large roundleaved orchid	U
<i>Ptilagrostis porteri</i>	Colorado Falseneedlegrass	U
<i>Schoenoplectus hallii</i>	Hall's bulrush	U
<i>Triteleia grandiflora</i>	Largeflower triteleia	S

Table H-2. USDA-FS Region 2 Sensitive Species List and Status for the entire Thunder Basin National Grassland (USDA-FS 2007) (Continued).		
Scientific Name	Common Name	Status on TBNG
Plants: Dicots		
<i>Aquilegia chrysantha</i> var. <i>rydbergii</i>	Golden Columbine	U
<i>Aquilegia laramiense</i>	Laramie Columbine	U
<i>Armeria maritima</i> var. <i>siberica</i>	Sea pink	U
<i>Asclepias uncialis</i>	Dwarf milkweed	U
<i>Astragalus barrii</i>	Barr's milkvetch	K
<i>Astragalus leptaleus</i>	Park milkvetch	U
<i>Astragalus missouriensis</i> var. <i>humistratus</i>	Missouri milkvetch	U
<i>Astragalus proximus</i>	Aztec milkvetch	U
<i>Astragalus ripleyi</i>	Ripleys milkvetch	U
<i>Astragalus wetherillii</i>	Wetherill milkvetch	U
<i>Braya glabella</i>	Smooth rockcress	U
<i>Chenopodium cycloides</i>	Sandhill goosefoot	U
<i>Cirsium perplexans</i>	Rocky Mountain thistle	U
<i>Descurainia torulosa</i>	Wind River tansymustard	U
<i>Draba exunguiculata</i>	Grays Peak whitlowgrass	U
<i>Draba grayana</i>	Hitchcock Gray's Peak whitlowgrass	U
<i>Draba smithii</i>	Smiths whitlowgrass	U
<i>Drosera anglica</i>	English sundew	U
<i>Drosera rotundifolia</i>	Roundleaf sundew	U
<i>Eriogonum brandegeei</i>	Brandegee wildbuckwheat	U
<i>Eriogonum exilifolium</i>	Drop-leaf wild buckwheat	S
<i>Eriogonum visherii</i>	Visher's buckwheat	S
<i>Gilia sedifolia</i>	Purple false gily-flower	U
<i>Ipomopsis aggregata</i> ssp. <i>weberi</i>	Weber's scarlet gilia	U
<i>Ipomopsis globularis</i>	Globe gilia	U
<i>Ipomopsis polyantha</i>	Pagosa skyrocket	U
<i>Lesquerella fremontii</i>	Fremont's bladderpod	U
<i>Lesquerella pruinosa</i>	Pagosa Springs bladderpod	U
<i>Machaeranthera coloradoensis</i>	Colorado tansymustard	U
<i>Mimulus gemmiparus</i>	Weber's monkeyflower	U
<i>Neoparrya lithophila</i>	Rock-loving aletes	U
<i>Oenothera harringtonii</i>	Harrington's oenothera	U
<i>Oreoxis humilis</i>	Pikes Peak spring parsley	U
<i>Parnassia kotzebuei</i>	Kotzebue's grass-of-Parnassus	U
<i>Penstemon absarokensis</i>	Absaroka penstemon	U

Table H-2. USDA-FS Region 2 Sensitive Species List and Status for the entire Thunder Basin National Grassland (USDA-FS 2007) (Continued).		
Scientific Name	Common Name	Status on TBNG
Plants (Continued)		
Plants: Dicots		
<i>Penstemon caryi</i>	Cary beardtongue	U
<i>Penstemon degeneri</i>	Degener's penstemon	U
<i>Penstemon harringtonii</i>	Harrington's beardtongue	S
<i>Phacelia scopulina</i> var. <i>submutica</i>	Debeque scorpionweed	U
<i>Physaria didymocarpa</i> var. <i>lanata</i>	Woolly twinpod	S
<i>Physaria pulvinata</i>	Cushion bladderpod	U
<i>Potentilla rupicola</i>	Front Range cinquefoil	U
<i>Primula egaliksensis</i>	Greenland primrose	U
<i>Pyrrocoma carthamoides</i> var. <i>subsquarrosa</i>	Absoroka goldenweed	U
<i>Pyrrocoma clementis</i> var. <i>villosa</i>	Tranquil goldenweed	U
<i>Pyrrocoma integrifolia</i>	Many-stemmed goldenweed	U
<i>Ranunculus karelinii</i>	Frosty buttercup	U
<i>Rubus arcticus</i> ssp. <i>acaulis</i>	Arctic bramble	U
<i>Salix arizonica</i>	Arizona willow	U
<i>Salix barrattiana</i>	Barrat willow	U
<i>Salix candida</i>	Sage willow	U
<i>Salix myrtilifolia</i>	Myrtleleaf willow	U
<i>Salix serissima</i>	Autumn willow	U
<i>Sanguinaria canadensis</i>	Bloodroot	U
<i>Shoshonea pulvinata</i>	Shoshonia	U
<i>Thalictrum heliophilum</i>	Sun-loving meadowrue	U
<i>Townsendia condensata</i> var. <i>anomala</i>	Cushion townsenddaisy	U
<i>Utricularia minor</i>	Lesser bladderpod	U
<i>Viburnum opulus</i> var. <i>americanum</i>	Highbush-cranberry	S
<i>Viola selkirkii</i>	Great-spurred violet	U
Fish		
<i>Nocomis biguttatus</i>	Hornyhead chub	U
<i>Couesius plumbeus</i>	Lake chub	U
<i>Gila pandora</i>	Rio Grande chub	U
<i>Gila robusta</i>	Roundtail chub	U
<i>Macrhybopsis gelida</i>	Sturgeon chub	U
<i>Phoxinus neogaeus</i>	Finescale dace	K
<i>Margariscus margarita</i>	Pearl dace	U

Table H-2. USDA-FS Region 2 Sensitive Species List and Status for the entire Thunder Basin National Grassland (USDA-FS 2007) (Continued).		
Scientific Name	Common Name	Status on TBNG
Fish (Continued)		
<i>Phoxinus eos</i>	Northern redbelly dace	U
<i>Hybognathus placitus</i>	Plains minnow	K
<i>Catostomus discobulus</i>	Bluehead sucker	U
<i>Catostomus latipinnis</i>	Flannelmouth sucker	U
<i>Catostomus platyrhynchus</i>	Mountain sucker	U
<i>Catostomus plebeius</i>	Rio Grande sucker	U
Invertebrates		
<i>Somatochlora hudsonica</i>	Hudsonian emerald butterfly	U
<i>Speyeria nokomis nokomis</i>	Great Basin silverspot butterfly	U
<i>Hesperia ottoe</i>	Ottoe skipper butterfly	U
<i>Speyeria idalia</i>	Regal fritillary	S
Reptiles and Amphibians		
<i>Rana pipiens</i>	Northern leopard frog	K
<i>Storeria occipitomaculata pahasapae</i>	Black Hills redbelly snake	S
Mammals		
<i>Euderma maculatum</i>	Spotted bat	K
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	K
<i>Myotis thysanodes</i>	Fringed myotis	K
<i>Cynomys ludovicianus</i>	Black-tailed prairie dog	K
<i>Vulpes velox</i>	Swift fox	K
Birds		
<i>Cygnus buccinator</i>	Trumpeter swan	U
<i>Botaurus lentiginosus</i>	American bittern	U
<i>Coccyzus americanus</i>	Yellow-billed cuckoo	K
<i>Numenius americanus</i>	Long-billed curlew	K
<i>Buteo regalis</i>	Ferruginous hawk	K
<i>Accipiter gentilis</i>	Northern goshawk	K
<i>Circus cyaneus</i>	Northern harrier	K
<i>Athene cunicularia</i>	Burrowing owl	K
<i>Asio flammeus</i>	Short-eared owl	K
<i>Calcarius ornatus</i>	Chestnut-collared longspur	K
<i>Calcarius mccownii</i>	McCown's longspur	K
<i>Centrocercus urophasianus</i>	Greater sage-grouse	K

Table H-2. USDA-F and Management Indicator Species List and Status for the entire Thunder Basin National Grasslands (USDA-FS 2007) (Continued).		
Scientific Name	Common Name	Status on TBNG
<u>Birds (Continued)</u>		
<i>Haliaeetus leucocephalus</i>	Bald eagle	K
<i>Charadrius montanus</i>	Mountain plover	K
<i>Lanius ludovicianus</i>	Loggerhead shrike	K
<i>Spizella breweri</i>	Brewer's sparrow	K
<i>Ammodramus savannarum</i>	Grasshopper sparrow	K
<i>Amphispiza billneata</i>	Sage sparrow	U
<i>Chlidonias niger</i>	Black tern	K
<i>Melanerpes lewis</i>	Lewis' Woodpecker	K

Table H-3. USDA-FS Region 2 Sensitive Species Status on TBNG and USDA-FS Lands within the West Antelope II General Analysis Area, and Habitat Suitability on USDA-FS Lands within the General Analysis Area (provided by USDA-FS Douglas Ranger District, July 2007).		
Common (Scientific) Name	Status on TBNG/EIS USDA-FS Lands¹	Suitable Habitat on EIS USDA-FS Lands¹
Plants: Ferns and Allies		
Prairie moonwort (<i>Botrychium campestre</i>)	Undocumented/Undocumented	Very Poor to Unsuitable Habitat
Narrowleaf moonwort (<i>Botrychium lineare</i>)	Undocumented/Undocumented	Unsuitable Habitat
Leathery grapefern (<i>Botrychium multifidum</i> var. <i>coulteri</i>)	Undocumented/Undocumented	Unsuitable Habitat
Plants: Monocots		
Ute Ladies'-tresses (<i>Spiranthes diluvialis</i>)	Undocumented/Undocumented	Unsuitable Habitat
Foxtail sedge (<i>Carex alopecoidea</i>)	Undocumented/Undocumented	Unsuitable Habitat
Elliptic spikerush (<i>Eleocharis elliptica</i>)	Undocumented/Undocumented	Unsuitable Habitat
Hall's Fescue (<i>Festuca hallii</i>)	Undocumented/Undocumented	Unsuitable Habitat
Wood (wild) lily (<i>Lilium philadelphicum</i>)	Undocumented/Undocumented	Unsuitable Habitat
Largeflower triteleia (<i>Triteleia grandiflora</i>)	Undocumented/Undocumented	Unsuitable Habitat
Plants: Dicots		
Barr's milkvetch (<i>Astragalus barrii</i>)	Documented/Undocumented	Suitable Habitat
Smooth goosefoot (<i>Chenopodium subglabrum</i>)	Undocumented/Undocumented	Unsuitable Habitat
Flat-top (fragrant) goldentop (goldenrod) (<i>Euthamia graminifolia</i>)	Undocumented/Undocumented	Unsuitable Habitat
Rosy palafox (<i>Palafoxia rosea</i> var. <i>macrolepis</i>)	Documented/Undocumented	Suitable Habitat

Table H-3. USDA-FS Region 2 Sensitive Species Status on TBNG and USDA-FS Lands within the West Antelope II General Analysis Area, and Habitat Suitability on USDA-FS Lands within the General Analysis Area (provided by USDA-FS Douglas Ranger District, July 2007) (Continued).		
Common (<i>Scientific</i>) Name	Status on TBNG/EIS USDA-FS Lands ¹	Suitable Habitat on EIS USDA-FS Lands ¹
Plants: Dicots (Continued)		
Lemonscent (crown-seed fetid-marigold) (<i>Pectis angustifolia</i>)	Documented/Undocumented	Suitable Habitat
Nelson larchleaf penstemon (<i>Penstemon laricifolius</i> ssp. <i>exifolius</i>)	Undocumented/Undocumented	Marginal Habitat
Woolly twinpod (<i>Physaria didymocarpa</i> var. <i>lanata</i>)	Undocumented/Undocumented	Marginal Habitat
Visher's buckwheat (<i>Eriogonum visherii</i>)	Tentatively Documented/Undocumented	Unsuitable Habitat
Highbush-cranberry (<i>Viburnum opulus</i> var. <i>americanum</i>)	Undocumented/Undocumented	Unsuitable Habitat
Amphibians		
Northern leopard frog (<i>Rana pipiens</i>)	Documented/No Observations	Very Poor to Unsuitable Habitat
Fish		
No Fish Species are Listed for this Area*		
Mammals		
Black-tailed prairie dog (<i>Cynomys ludovicianus</i>)	Documented/Documented	Suitable Habitat
Swift fox (<i>Vulpes velox</i>)	Documented/No Observations	Suitable but Unoccupied Habitat
Birds		
Long-billed curlew (<i>Numenius americanus</i>)	Documented/No Observations	Marginal Habitat
Ferruginous hawk (<i>Buteo regalis</i>)	Documented/Documented	Suitable Habitat

Table H-3. USDA-FS Region 2 Sensitive Species Status on TBNG and USDA-FS Lands within the West Antelope II General Analysis Area, and Habitat Suitability on USDA-FS Lands within the General Analysis Area (provided by USDA-FS Douglas Ranger District, July 2007) (Continued).		
Common (Scientific) Name	Status on TBNG/EIS USDA-FS Lands¹	Suitable Habitat on EIS USDA-FS Lands¹
Birds (Continued)		
Burrowing owl (<i>Athene cunicularia</i>)	Documented/Documented	Suitable Habitat
Chestnut-collared longspur (<i>Calcarius ornatus</i>)	Documented/Documented	Suitable Habitat
Birds (Continued)		
McCown's longspur (<i>Calcarius mccownii</i>)	Documented/Documented	Suitable Habitat
Greater sage-grouse (<i>Centrocercus urophasianus</i>)	Documented/No Observations	Marginal Habitat
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Documented/ No Observations	Suitable Rangeland Foraging Habitat
Mountain Plover (<i>Charadrius montanus</i>)	Documented/Documented	Suitable Habitat
Loggerhead shrike (<i>Lanius ludovicianus</i>)	Documented/No Observations	Marginal Habitat
Brewer's sparrow (<i>Spizella breweri</i>)	Documented/No Observations	Marginal Habitat

¹ EIS USDA-FS Lands are USDA-FS administered lands within the West Antelope II LBA tract general analysis area.

* The USDA-FS lands included in this tract are not known nor expected to contain or provide habitat for these species.

USDA-FS SENSITIVE SPECIES HABITAT AND OCCURRENCES ON USDA-FS LANDS WITHIN THE WEST ANTELOPE II GENERAL ANALYSIS AREA

Site-specific data on the occurrence of USDA-FS Region 2 Sensitive Species on USDA-FS Lands within the West Antelope II general analysis area were obtained from the Wyoming Department of Environmental Quality/Land Quality Division (WDEQ/LQD) permit applications, annual and baseline reports for the Antelope Mine, the Rocky Mountain Herbarium, the Wyoming Natural Diversity Database, and the USDA-FS. Annual wildlife surveys have been conducted for the adjacent Antelope Mine since 1982. Those surveys included the mine permit area and a one- or two-mile surrounding perimeter (depending on the purpose of the surveys). Those extended survey perimeters for the annual wildlife monitoring program coincidentally encompassed all USDA-FS administered lands and adjacent lands within the LBA tract general analysis area. More details describing that overlap are provided in the Wildlife section, below. Several intensive vegetation baseline inventories have also been completed on each mine's current permit area as well as the West Antelope II general analysis area.

DIRECT AND INDIRECT EFFECTS OF SENSITIVE SPECIES

The following discussion is an evaluation of the potential direct and indirect environmental effects on USDA-FS Region 2 Sensitive Species identified as inhabiting or potentially inhabiting USDA-FS lands within the West Antelope II general analysis area, as outlined in Table H-3.

PLANTS

Seasonal plant species surveys have been conducted on portions of the West Antelope II general analysis area during the various previous vegetation baseline inventories completed for the Antelope Coal Mine and North Antelope/Rochelle mine as well as for prior EIS documents. Additional seasonal plant species surveys were completed on the general analysis area during baseline inventories completed for the Antelope Mine in 2007.

There is no suitable habitat on USDA-FS lands within the general analysis area for 12 of the 18 plant species listed in Table H-3. All of the 16 plant species will be discussed here because potential habitat may be present on other portions of the general analysis area even if suitable habitat is not present on the USDA-FS lands.

1. Prairie Moonwort (*Botrychium campestre*)

The prairie moonwort has not been documented on USDA-FS lands within the general analysis area or within the TBNG. This plant species is suspected of occurring on TBNG lands where suitable habitat is present. This species was only recorded in Wyoming in a semi-shady mixed deciduous and ponderosa pine forest on sandy soils in the Black Hills. Prairie moonworts are known to

exist in a variety of other habitats such as those underlain by Pierre shale, the Laramie Formation, calcareous sedimentary rocks, calcareous soils underlain by limestone, sandy soils and loess prairie. These habitats are generally limited on the West Antelope II general analysis area, with only some areas dominated by sandy soils present.

Existing Conditions

Prime habitats for the prairie moonwort are not present on the FS lands within the general analysis area. Sites with sandy soils are present on USDA-FS lands and other portions of the general analysis area but these areas are rather sparsely vegetated and do not provide habitat preferred by this plant species. Prairie moonworts have not been recorded on the general analysis area or adjacent areas.

Indirect and Direct Impacts

If present on areas to be disturbed by mining, individuals of this species would be lost when topsoil is removed or during disturbances caused by other mining activities.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives **may impact individuals but is not likely to cause a trend to federal listing or loss of viability** within the planning area. As indicated, the general analysis area does not provide suitable habitat for this plant species. The potential for loss of individuals or preferred habitats is very low.

2. Narrowleaf Moonwort (*Botrychium lineare*)

The narrowleaf moonwort has not been documented on USDA-FS lands within the general analysis area or within the TBNG. This plant species is suspected of occurring on TBNG lands where suitable habitat is present. This species has an affinity for riparian areas and is associated with spruce/fir forests, lodgepole pine forests and forest meadows.

Existing Conditions

Habitats for the narrowleaf moonwort are not present on the USDA-FS lands within the general analysis area. Suitable riparian habitats or forest habitats are not present on these USDA-FS lands within the general analysis area. Riparian sites associated with Antelope Creek, Spring Creek and Horse Creek are present on other portions of the general analysis area but these sites do not appear to provide optimum habitat for this species. The narrowleaf moonwort has not been recorded on the general analysis area or adjacent areas.

Indirect and Direct Impacts

If present on areas to be disturbed by mining, individuals of this species would be lost when topsoil is removed or during disturbances caused by other mining activities.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives **may impact individuals but is not likely to cause a trend to federal listing or loss of viability** within the planning area. As indicated, the general analysis area does not provide suitable habitat for this plant species. The potential loss of individuals or preferred habitats is very low.

3. Leathery Grapefern (*Botrychium multifidum* var. *coulteri*)

The leathery grapefern has not been documented on USDA-FS lands within the general analysis area or within the TBNG. This plant species is suspected of occurring on TBNG lands where suitable habitat is present. This species generally has an affinity for meadows, wetlands, floodplains and other wet areas in open to forested habitats within forests.

Existing Conditions

Habitats for the leathery grapefern are not present on the USDA-FS lands within the general analysis area. Suitable riparian habitats or forest habitats are not present on these USDA-FS lands within the general analysis area. Riparian sites associated with Antelope Creek, Spring Creek and Horse Creek are present on other portions of the general analysis area but these sites do not appear to provide optimum habitat for this species. The leathery grapefern has not been recorded on the general analysis area or adjacent areas.

Indirect and Direct Impacts

If present on areas to be disturbed by mining, individuals of this species would be lost when topsoil is removed or during disturbances caused by other mining activities.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives will have **no impact** on the leathery grapefern. As indicated, the general analysis area does not provide suitable habitat for this plant species so the potential loss of individuals or preferred habitats is not expected.

4. Ute ladies'-tresses (*Spiranthes diluvialis*)

The Ute ladies'-tresses is a perennial forb plant species and is also listed as threatened by the USFWS. Please see Appendix I for a more detailed description of Ute ladies'-tresses. This species has not been documented on USDA-FS lands within the general analysis area or within the TBNG. This plant species is suspected of occurring on TBNG lands where suitable habitat is present. The Ute ladies'-tresses has an affinity for open meadows, wetlands, floodplains and other wet areas that are subirrigated well into July and August. Ute ladies'-tresses has been recorded at several locations about 25 miles west of the general analysis area on Sand Creek, Antelope Creek, and its tributaries. No occurrences have been recorded in Campbell County, nor in the West Antelope II general analysis area in Converse County.

Existing Conditions

Ute ladies'-tresses habitat is not present on the USDA-FS lands within the general analysis area. On non-Forest Service lands in the general analysis area, riparian sites associated with Antelope Creek, Spring Creek, and Horse Creek are present. Portions of these riparian areas contain potential habitat for this species. Potential Ute ladies'-tresses habitat in the general analysis area was surveyed 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. To date, no Ute ladies'-tresses occurrences have been recorded in Campbell County nor in the West Antelope II general analysis area in Converse County. The nearest known Ute ladies'-tresses population is located on an Antelope tributary approximately 20 miles upstream of the project area.

Indirect and Direct Impacts

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. 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.

Determination of Effect and Rationale

As previously described, multiple orchid surveys have been conducted over multiple years during the known time of flowering using USFWS accepted techniques. All surveys have resulted in negative findings.

Ute ladies'-tresses habitat is not present on the USDA-FS lands within the general analysis area. On non-Forest Service lands in the general analysis area, implementation of 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 existing suitable

habitat at the Antelope Mine and other mines in the area have not found Ute ladies'-tresses.

5. Foxtail Sedge (*Carex alopecoidea*)

The foxtail sedge is a perennial plant species and has not been documented on USDA-FS lands within the general analysis area or within the TBNG. This plant species is suspected of occurring on TBNG lands where suitable habitat is present. The foxtail sedge generally has an affinity for wet meadows and willow-sedge communities along wet, shady creek bottoms and springs.

Existing Conditions

Habitats for the foxtail sedge are not present on the USDA-FS lands within the general analysis area. Suitable wet meadows or willow-sedge communities are not present on these USDA-FS lands. Riparian sites associated with Antelope Creek, Spring Creek and Horse Creek are present on other portions of the general analysis area but these sites do not appear to provide optimum habitat for this species. The foxtail sedge has not been recorded on the general analysis area or adjacent areas.

Indirect and Direct Impacts

If present on areas to be disturbed by mining, individuals of this species would be lost when topsoil is removed or during disturbances caused by other mining activities.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives should have **no impact** on the foxtail sedge. As indicated, the general analysis area does not provide suitable habitat for this plant species. The potential for loss of individuals or preferred habitats is not expected.

6. Elliptic Spikerush (*Eleocharis elliptica*)

The elliptic spikerush is a perennial and has not been documented on USDA-FS lands within the general analysis area or within the TBNG. This plant species is suspected of occurring on TBNG lands where suitable habitat is present. The foxtail sedge generally has an affinity for wetland areas created by seeps or springs but may also be found in temporarily flooded areas.

Existing Conditions

Habitats for the elliptic spikerush are not present on the USDA-FS lands within the general analysis area. Suitable wetland habitats are not present on these USDA-FS lands. Wetland sites associated with Antelope Creek, Spring Creek and Horse Creek are present on other portions of the general analysis area and these sites may provide marginal habitat for this species. The elliptic spikerush has not been recorded on the general analysis area or adjacent areas.

Indirect and Direct Impacts

If present on areas to be disturbed by mining, individuals of this species would be lost when topsoil is removed or during disturbances caused by other mining activities. However, due to lack of abundant suitable habitat the impacts to this species overall would be minimal.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives **may impact individuals but is not likely to cause a trend to federal listing or loss of viability** within the planning area. As indicated, the general analysis area does not provide abundant habitat for this plant species so the potential loss of individuals or preferred habitats is low.

7. Hall's Fescue (*Festuca hallii*)

The Hall's fescue is a tufted perennial grass and has not been documented on USDA-FS lands within the general analysis area or within the TBNG. This plant species is suspected of occurring on TBNG lands where suitable habitat is present. This species generally has an affinity for montane meadows, slopes and edges of open coniferous woods and meadows above 6000 feet in Wyoming.

Existing Conditions

Habitats for the Hall's fescue are not present on the USDA-FS lands within the general analysis area. Suitable montane habitats above 6000 feet are not present on these USDA-FS lands within the general analysis area or within the rest of the general analysis area. The Hall's fescue has not been recorded on the general analysis area or adjacent areas.

Indirect and Direct Impacts

If present on areas to be disturbed by mining, individuals of this species would be lost when topsoil is removed or during disturbances caused by other mining activities.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives should have **no impact** on the Hall's fescue. As indicated, the general analysis area does not provide suitable habitat for this plant species. The potential loss of individuals or preferred habitats is not expected.

8. Wood Lily (*Lilium philadelphicum*)

The wood lily is a perennial herb and has not been documented on USDA-FS lands within the general analysis area or within the TBNG. This plant species is suspected of occurring on TBNG lands where suitable habitat is present. This species generally has an affinity for woodland meadows and woodland grasslands.

Existing Conditions

Habitats for the wood lily are not present on the USDA-FS lands within the

general analysis area. Suitable woodland meadow or grassland habitats are not present on these USDA-FS lands within the general analysis area or within the rest of the general analysis area. The wood lily has not been recorded on the general analysis area or adjacent areas.

Indirect and Direct Impacts

If present on areas to be disturbed by mining, individuals of this species would be lost when topsoil is removed or during disturbances caused by other mining activities.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives should have **no impact** on the wood lily. As indicated, the general analysis area does not provide suitable habitat for this plant species so the potential loss of individuals or preferred habitats is not expected.

9. Largeflower Triteleia (*Triteleia grandiflora*)

The largeflower triteleia is a perennial herb and has not been documented on USDA-FS lands within the general analysis area or within the TBNG. This plant species is suspected of occurring on TBNG lands where suitable habitat is present. This species generally has an affinity for grassy areas in sagebrush at the edge of aspen and lodgepole pine forests and in pinon-juniper woodlands to pine forests and hills.

Existing Conditions

Habitats for the largeflower triteleia are not present on the USDA-FS lands within the general analysis area. Suitable grassy areas in sagebrush at the edge of aspen and lodgepole pine forests and pinon-juniper woodlands or pine forests and hills are not present on these USDA-FS lands within the general analysis area or within the rest of the general analysis area. The largeflower triteleia has not been recorded on the general analysis area or adjacent areas.

Indirect and Direct Impacts

If present on areas to be disturbed by mining, individuals of this species would be lost when topsoil is removed or during disturbances caused by other mining activities.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives should have **no impact** on the largeflower triteleia. As indicated, the general analysis area does not provide suitable habitat for this plant species so the potential loss of individuals or preferred habitats is not expected.

10. Barr's Milkvetch (*Astragalus barrii*)

The Barr's milkvetch is a matt-forming perennial forb that is known from numerous occurrences on the USDA-FS lands within the TBNG. As more surveys are completed, new occurrences are reported. The Barr's milkvetch is

found primarily on dry, sparsely-vegetated rocky prairie breaks, knolls, hillsides and ridges. Parent material is calcareous soft shale, siltstone or silty sandstone. Most populations appear to be stable, although populations may decline under drought.

Existing Conditions

Astragalus barrii is a regional endemic plant of the plains in southwestern South Dakota, eastern Wyoming, southeastern Montana, and northwestern Nebraska. According to USDA-FS, this plant species is known to occur in six counties in Wyoming, and there are eleven known occurrences of *A. barrii* in the USDA-FS TBNG.

Suitable habitat for the Barr's milkvetch is present on the USDA-FS lands within the general analysis area as well as other lands within the general analysis area. When surveyed, the Barr's milkvetch plants were not in bloom, but populations were estimated to consist of approximately 500 to 1,000 individuals within the project area. Barr's milkvetch populations and individuals were identified in several locations within the project area. Potential habitat and additional populations also occur in surrounding areas outside of the general analysis area. Barr's milkvetch has been collected and positively identified approximately 0.75 miles south of the general analysis area in the SWSWSW1/4 of Section 21 T. 40 N., R. 71 W. based on specimens on file with the Rocky Mountain Herbarium in Laramie, Wyoming.

Indirect and Direct Impacts

If lands within the West Antelope II general analysis area are leased and mined, potential habitat, individuals, and *A. barrii* populations would be lost due to surface disturbances caused by mining activities. These losses would most likely be permanent unless disturbed lands are reclaimed to habitats that would support this plant species.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives **may impact individuals but is not likely to cause a trend to federal listing** because there are *Astragalus barrii* occurrences outside of the project area that will not be affected by the proposed action or alternatives.

11. Smooth Goosefoot (*Chenopodium subglabrum*)

The smooth goosefoot is an annual forb and has not been documented on USDA-FS lands within the general analysis area or within the TBNG. This plant species is suspected of occurring on TBNG lands where suitable habitat is present. This species generally has an affinity for sand bars and sandy blowouts in riparian areas.

Existing Conditions

Habitats for the smooth goosefoot are not present on the USDA-FS lands within the general analysis area. Riparian areas are not present on the USDA-FS

lands within the general analysis area. Riparian areas are present within portions of the rest of the general analysis area in association with Antelope Creek, Spring Creek and Horse Creek but these areas do not contain the required sand bar or sandy blowout habitats required for this plant species. The smooth goosefoot has not been recorded on the general analysis area or adjacent areas.

Indirect and Direct Impacts

If present on areas to be disturbed by mining, individuals of this species would be lost when topsoil is removed or during disturbances caused by other mining activities.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives should have **no impact** on the smooth goosefoot. As indicated, the general analysis area does not provide suitable habitat for this plant species so the potential loss of individuals or preferred habitats is not expected.

12. Flat-top Goldentop (*Euthamia graminifolia*)

The flat-top goldentop is a rhizomatous perennial forb and has not been documented on USDA-FS lands within the general analysis area or within the TBNG. This plant species is suspected of occurring on TBNG lands where suitable habitat is present. In Wyoming this species generally has an affinity for stony sandbars and streambanks but may also be found on moist or drying sites along open streambanks or roadside ditches.

Existing Conditions

Habitats for the flat-top goldentop are not present on the USDA-FS lands within the general analysis area. Wetland or streambank areas are not present on the USDA-FS lands within the general analysis area. Streambanks and wetland areas are present within portions of the rest of the general analysis area in association with Antelope Creek, Spring Creek and Horse Creek. These areas generally do not contain the typical habitats required for this plant species but marginal habitats are present. The flat-top goldentop has not been recorded on the general analysis area or adjacent areas.

Indirect and Direct Impacts

If present on areas to be disturbed by mining, individuals of this species would be lost when topsoil is removed or during disturbances caused by other mining activities.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives **may impact individuals but is not likely to cause a trend to federal listing or loss of viability** within the planning area. As indicated, the general analysis area does not provide suitable habitat for this plant species so the potential loss of individuals or preferred habitats is low.

13. Rosy Palafox (*Palafoxia rosea* var. *macrolepis*)

The rosy palafox is an annual forb plant species and has not been documented on USDA-FS lands within the general analysis area but has been recorded on other lands within the TBNG. This plant species is suspected of occurring on other TBNG lands where suitable habitat is present. In Wyoming this species generally has an affinity for sagebrush and mixed-grass prairie habitats on sandy soils.

Existing Conditions

Habitats utilized by the rosy palafox are present on the USDA-FS lands within the general analysis area and on other lands within the remainder of the general analysis area. Sagebrush and mixed-grass prairie plant communities are present on sandy soils in the study area. However, the rosy palafox has not been recorded on these lands but is potentially present. This plant species has been documented southeast of the general analysis area.

Indirect and Direct Impacts

If present on areas to be disturbed by mining, individuals of this species would be lost when topsoil is removed or during disturbances caused by other mining activities. However, due to the presence of abundant habitat outside of the general analysis area and the fact this plant is abundant in other areas, the impacts to this species overall would be minimal.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives **may impact individuals but is not likely to cause a trend to federal listing or loss of viability** within the planning area. As indicated, the general analysis area does contain suitable habitat for this plant species but the rosy palafox has not been documented on the site. This species has been documented southeast of the general analysis area and abundant habitat is present on other sites outside of the general analysis area that will not be affected.

14. Lemonscent (*Pectis angustifolia*)

The lemonscent is an annual forb plant species and has not been documented on USDA-FS lands within the general analysis area but has been recorded on other lands within the TBNG. This plant species is suspected of occurring on other TBNG lands where suitable habitat is present. In Wyoming this species generally has an affinity for gravel hills and scoria slopes. Lemonscent is also known to occur in low areas in sandy ravines and on sandbars.

Existing Conditions

Habitats utilized by lemonscent are present on the USDA-FS lands within the general analysis area and on other lands within the remainder of the general analysis area. Gravel hills, slopes and sandy ravines are present in the study area. However, lemonscent has not been recorded on these lands but could potentially be present. This plant species has been documented south of the general analysis area.

Indirect and Direct Impacts

If present on areas to be disturbed by mining, individuals of this species would be lost when topsoil is removed or during disturbances caused by other mining activities. However, due to the presence of abundant habitat outside of the general analysis area and the fact this plant is abundant in other areas, the impacts to this species overall would be minimal.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives **may impact individuals but is not likely to cause a trend to federal listing or loss of viability** within the planning area. As indicated, the general analysis area does contain suitable habitat for this plant species but lemonscent palafox has not been documented on the site. This species has been documented south and east of the general analysis area and abundant habitat is present on other sites outside of the general analysis area that will not be affected.

15. Nelson Larchleaf Penstemon (*Penstemon laricifolius* spp. *exifolius*)

The larchleaf penstemon is a perennial forb plant species and has not been documented on USDA-FS lands within the general analysis area or on other lands within the TBNG. This plant species is suspected of occurring on other TBNG lands where suitable habitat is present. In Wyoming this species generally has an affinity for dry, rocky, gravelly or sandy slopes, ridgetops and upland flats with shallow soils. Most populations in Wyoming are found at elevations above 6000 feet, but this species has been documented at lower elevations in the state.

Existing Conditions

Habitats utilized by larchleaf penstemon are present on the USDA-FS lands within the general analysis area and on other lands within the remainder of the general analysis area. Gravel hills, rocky slopes and rough breaks are present in the study area. The larchleaf penstemon has not been recorded on these lands but has potential habitat. This plant species has not been documented near the general analysis area.

Indirect and Direct Impacts

If present on areas to be disturbed by mining, individuals of this species would be lost when topsoil is removed or during disturbances caused by other mining activities. However, due to the presence of abundant habitat outside of the general analysis area and the fact this plant is abundant in other areas, the impacts to this species overall would be minimal.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives **may impact individuals but is not likely to cause a trend to federal listing or loss of viability** within the planning area. As indicated, the general analysis area does contain suitable habitat for this plant species but the larchleaf penstemon has not been documented on the site. This species has been documented and is common in

southern Wyoming and abundant habitat is present on other sites outside of the general analysis area that will not be affected.

16. Wooly Twinpod (*Physaria didymocarpa* var. *lanata*)

The wooly twinpod is a perennial forb plant species and has not been documented on USDA-FS lands within the general analysis area or on other lands within the TBNG. This plant species is suspected of occurring on other TBNG lands where suitable habitat is present. In Wyoming this species generally has an affinity for dry redbed clay-shale slopes, limey-sandstone outcrops, roadcuts and other exposed rock-cliff substrates. Most populations in Wyoming have been documented in the foothills of the Big Horn Mountains.

Existing Conditions

Habitats utilized by the wooly twinpod are present on the USDA-FS lands within the general analysis area and on other lands within the remainder of the general analysis area. Gravel hills, rocky slopes and rough breaks are present in the study area. Wooly twinpod has not been recorded on these lands but is potentially present. This plant species has not been documented near the general analysis area.

Indirect and Direct Impacts

If present on areas to be disturbed by mining, individuals of this species would be lost when topsoil is removed or during disturbances caused by other mining activities. However, due to the presence of abundant habitat outside of the general analysis area and the fact this plant is abundant in other areas, the impacts to this species overall would be minimal.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives **may impact individuals but is not likely to cause a trend to federal listing or loss of viability** within the planning area. As indicated, the general analysis area does contain suitable habitat for this plant species but the wooly twinpod has not been documented on the site. This species has been documented and is common in north-central Wyoming and abundant habitat is present on other sites outside of the general analysis area that will not be affected.

17. Visher's buckwheat (*Eriogonum visherii*)

The Visher's buckwheat has not been documented on USDA-FS lands within the general analysis area but has been tentatively identified within the TBNG. This plant species is suspected of occurring on TBNG lands where suitable habitat is present. This species generally has an affinity for gullied ridges and eroded badland hills. These sites generally consist of barren shale and clay outcrops with at least 50% bare soil, high salt content and shrink/swell clay soils. Typical habitat includes badland islands in grasslands.

Existing Conditions

Habitats for the Visher's buckwheat are not present on the USDA-FS lands

within the general analysis area. Suitable gullied ridges, eroded sites or badland habitats are not present on these USDA-FS lands within the general analysis area. Suitable habitats may be found in other portions of the general analysis area but these sites do not appear to provide optimum habitat for this species. The Visher's buckwheat has not been recorded on the general analysis area or adjacent areas.

Indirect and Direct Impacts

If present on areas to be disturbed by mining, individuals of this species would be lost when topsoil is removed or during disturbances caused by other mining activities.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives will have **no impact** on the Visher's buckwheat. As indicated, this species has not been documented on the site and the general analysis area does not provide optimum suitable habitat for this plant species so the potential loss of individuals or preferred habitats is not expected.

18. Highbush-cranberry (*Viburnum opulus var. americanum*)

The highbush-cranberry has not been documented on USDA-FS lands within the general analysis area or within the TBNG. This plant is found within Crook County and is suspected of occurring on TBNG lands where suitable habitat is present. This species generally has an affinity for moist sites including wooded hillsides, thickets or low woodlands. The highbush-cranberry is found all across northern North America.

Existing Conditions

Habitats for the highbush-cranberry are not present on the USDA-FS lands within the general analysis area. Suitable moist wooded habitats are not present on these USDA-FS lands within the general analysis area. Marginally suitable habitats may be found in limited amounts on other portions of the general analysis area but these sites do not appear to provide optimum habitat for this species. The highbush-cranberry has not been recorded within the general analysis area or adjacent areas.

Indirect and Direct Impacts

If present on areas to be disturbed by mining, individuals of this species would be lost when topsoil is removed or during disturbances caused by other mining activities.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives will have **no impact** on the highbush-cranberry. As indicated, this species has not been documented on the site and the general analysis area does not provide optimum suitable habitat for this plant species so the potential loss of individuals or preferred habitats is not expected.

WILDLIFE

WDEQ/LQD guidelines and regulations specify different wildlife survey areas for different species and for different survey purposes (baseline studies or annual monitoring). In the wildlife discussions for the USDA-FS section of this document, the terms “one-half, one-, and two-mile perimeter wildlife survey area” refer to perimeters surrounding the existing Antelope Mine permit area. Surveys conducted during annual monitoring (for existing permitted areas) include the permit area and a one-half or one-mile perimeter around the permit area. The two-mile perimeter is used for big game counts in alternate annual monitoring years and for new wildlife baseline studies. The annual wildlife monitoring perimeters coincidentally also encompassed all USDA-FS lands within both the BLM study area (i.e., the tract as applied for and lands that BLM is considering adding to the tract) and the general analysis area (BLM study area plus a surrounding one-quarter-mile perimeter) for the West Antelope II LBA tract.

USDA-FS typically assesses impacts to resources on its managed lands and, when applicable, adjacent lands that could also be impacted by the proposed action. For wildlife, the USDA-FS is interested in knowing what resources and potential impacts occur within a one- or two-mile perimeter surrounding their lands, depending on the species. As illustrated in Figure H-1, the one-mile annual monitoring perimeter for the Antelope Mine overlapped all USDA-FS lands under analysis, all but the southwestern-most 0.5 mi² of the one-mile perimeter around those federal lands, and all except the western- and southern-most 7.5 mi² of the two-mile perimeter around the USDA-FS lands.

Baseline wildlife inventories in a two-mile perimeter survey area were conducted for the overall West Antelope II LBA tract beginning in 2006. Due to the proximity of USDA-FS lands to the LBA tract, that two-mile wildlife baseline perimeter also covered all perimeters around USDA-FS lands.

To summarize, all USDA-FS lands associated with this EIS analysis have been included in wildlife monitoring surveys for the adjacent Antelope Mine annually since 1982. Those surveys also included substantial portions of the one- and two-mile perimeters around those USDA-FS lands.

Regular surveys conducted in and near USDA-FS lands over the years included raptors, mountain plovers (*Charadrius montanus*), upland game birds, migratory bird species of management concern, lagomorphs, and big game. Supplemental specific surveys for bald eagles (*Haliaeetus leucocephalus*), herptiles, waterfowl, and other species were conducted periodically during baseline studies for the Antelope Mine. Efforts included a variety of approved survey methods, such as fixed-wing aerial, remote observation via spotting scopes and binoculars, pedestrian, nocturnal spotlighting, belt transects, point counts, and trapping. All incidental sightings of those species were also recorded during each site visit, including notes on species, number of

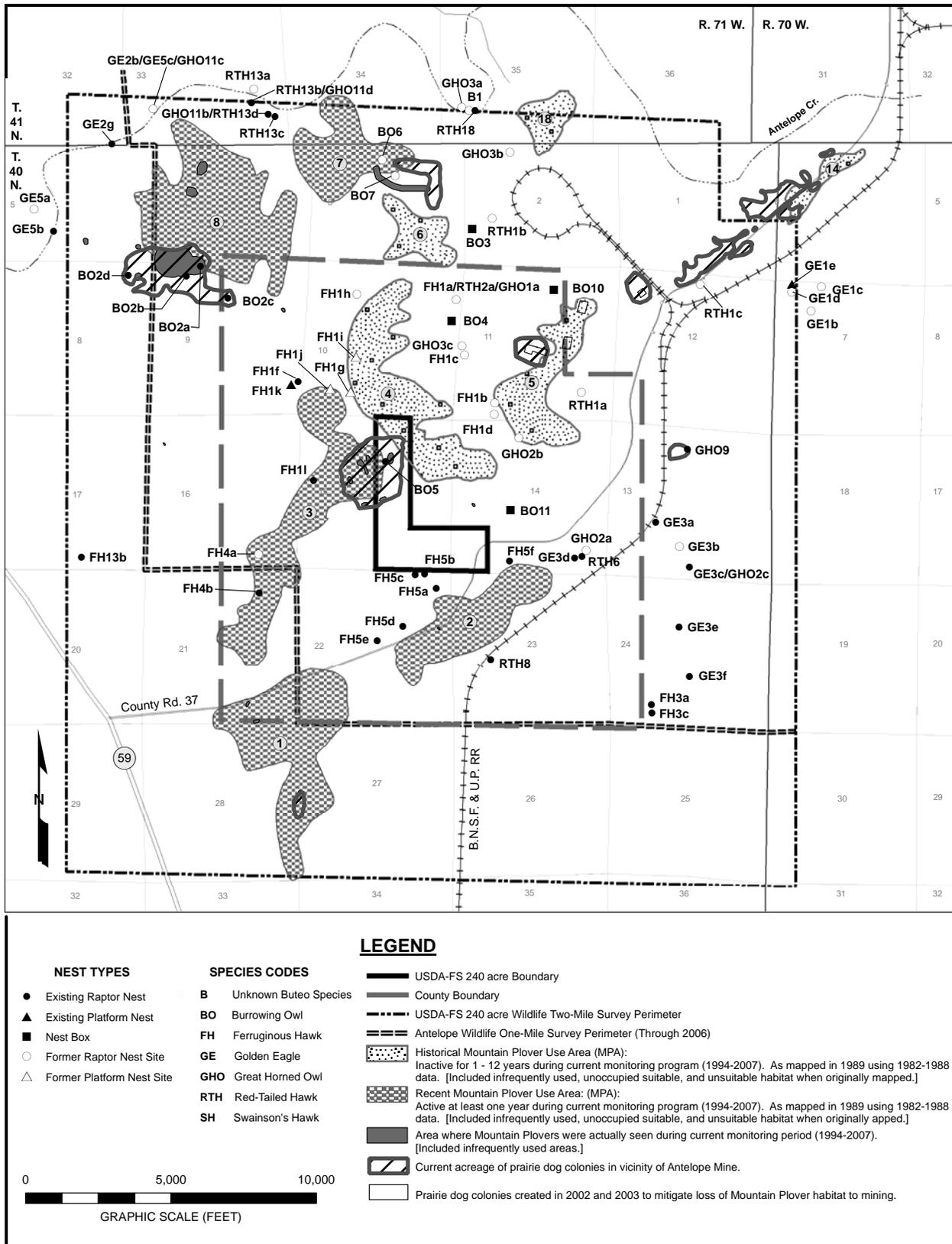


Figure H-1. 2007 Biological Assessment / Biological Evaluation for USDA-FS Administered Lands within the West Antelope II Study Area.

individuals, sex/age (when possible), habitat, and location. Specific details regarding survey methods and results from annual monitoring and baseline inventories for the Antelope Mine, dating back to 1978, are provided in reports on file with the WDEQ-LQD and/or USDA-FS, and thus are not provided in this document.

The entire list of Region 2 Sensitive Species was reviewed and every vertebrate species was considered for full evaluation. However, only those species that might potentially be affected directly or indirectly by implementation of the Proposed Action or Alternatives on USDA-FS lands were selected for evaluation (Table H-3). For example, if a vertebrate species was known to occur on or near USDA-FS lands, or suitable but unoccupied habitat was present in that area and would be disturbed, then potential effects were evaluated. If suitable habitat was not present in the area, no further analysis was conducted.

Thirteen vertebrate species were identified that could potentially be affected by implementation of the Proposed Action or Alternatives. Many other sensitive vertebrates and one invertebrate that had been documented elsewhere on the TBNG were not evaluated further because of a lack of suitable habitat on or near USDA-FS lands, or because no such habitat would be physically disturbed or otherwise affected by implementation of the Proposed Action or Alternatives.

Brief discussions of the status, distribution, and local occurrence of each evaluated species and the potential direct and indirect impacts are presented in each of the following subsections. Cumulative impacts are discussed for all evaluated Region 2 Sensitive Species at the end of this section. Determinations of impact are included within each species' subsection.

1. Northern Leopard Frog (*Rana pipiens*)

Northern leopard frogs range from the Great Slave Lake and Hudson Bay, south to Kentucky and New Mexico (NatureServe 2007). This species is considered relatively common within Wyoming (Baxter and Stone 1980, Cerovski et al. 2004). Northern leopard frogs require shallow, permanent, or semi-permanent standing water with at least some emergent vegetation for breeding (Wagner 1997). Conversely, they use deeper lakes or ponds with well-oxygenated water that does not freeze to the bottom as overwintering habitat (Wagner 1997). Leopard frogs must have good quality water to successfully reproduce, as degraded or turbid water has the potential to negatively affect development of eggs and tadpoles. Overcrowding and changes in water temperature and pH (5.5 or lower) can increase the incidence of disease and mortality (NatureServe 2007) in this species. Adult frogs feed upon a variety of insects and other invertebrates, tadpoles, snakes, and fish (Cerovski et al. 2004), while tadpoles feed primarily upon small invertebrates, plant tissue, and organic debris. Adults also forage within aquatic and upland habitats, whereas tadpoles are restricted to aquatic habitats. Although their overall range remains essentially undiminished in size, many populations are declining.

Major factors affecting leopard frog populations are habitat loss in some portions of their range, habitat degradation, overexploitation, interactions with non-native species, climate change, disease, and other unknown causes (Wagner 1997).

Existing Conditions

The northern leopard frog has been observed in northern Converse County, but has not officially been recognized as breeding there (Cerovski et al. 2004). Although formal anuran surveys were not required or conducted at the adjacent Antelope Mine, biologists have been on-site in all seasons over multiple decades and listened and watched for leopard frogs and other herptiles while conducting all other surveys throughout the area, including those on USDA-FS lands within the West Antelope II LBA tract and adjacent lands.

Habitat conditions for northern leopard frogs vary considerably between the overall BLM general analysis area for the West Antelope II LBA tract and the 240 acres of USDA-FS lands in the southeastern corner of that larger area. The BLM general analysis area includes portions of Antelope Creek and Spring Creek, which are intermittent streams that occasionally retain small pools of water during spring and early summer. The confluence of Antelope and Spring Creeks is located approximately 2.5 miles north of the USDA-FS lands analyzed for this EIS. As indicated in Table H-1, leopard frogs have been documented infrequently in the BLM general analysis area during baseline and annual monitoring surveys conducted since the late 1970s. Most of those records consisted of frog vocalizations along Antelope Creek in spring. Both Antelope Creek and Spring Creek are often dry by mid- to late summer; without flow to maintain open water, any pools persisting until winter freeze solid, thus limiting overwintering habitat for this species.

The 240 acres of USDA-FS lands within the general analysis area do not have any perennial or intermittent streams. Water sources on those lands are limited to ephemeral tributary draws that run very briefly (hours or 1-2 days) and only during heavy precipitation events such as rain storms and excessive snow melt. No emergent vegetation occurs in these draws, because no persistent standing water is present. Additionally, no reservoirs or other impoundments occur on these 240 acres. Therefore, none of the physical characteristics considered as optimum for the various life stages of this species are present on the 240 acres of USDA-FS lands in the southeastern corner of the West Antelope II general analysis area, and no leopard frogs or anuran egg masses have been documented on those lands during more than 25 years of annual monitoring efforts (Table H-3).

Direct and Indirect Effects

Wetland and aquatic habitats for northern leopard frogs are considered very poor to unsuitable on USDA-FS lands (Table H-3), and only marginally and seasonally suitable elsewhere in the West Antelope II general analysis area, as

described above. Furthermore, no frog sightings have been recorded on USDA-FS lands during baseline surveys or annual monitoring completed between 1978 and 2007. Consequently, northern leopard frogs and their aquatic and terrestrial habitats are not expected to be impacted if the 240 acres of USDA-FS lands in the West Antelope II LBA Tracts were leased.

In the unlikely event that this species is present in the future, direct loss of, or injury to, dispersing and foraging adult frogs could result from encounters with mine vehicles or heavy equipment though, again, such risks are minimal due to the lack of frog sightings on USDA-FS lands in the LBA tract to date. It is possible that reservoirs or ponds created for flood control, sedimentation, water storage purposes, or wetland mitigation measures could provide suitable foraging, breeding, and wintering habitat for northern leopard frogs if they can support adequate water levels and appropriate amounts of emergent vegetation. Even if those features were created, most artificial water structures would still be limited to relatively shallow, seasonal waters that would not provide for year-round habitat needs of this frog species. Should those efforts result in improved aquatic habitats, the potential resulting presence of adults, tadpoles, and/or egg masses could be injured or killed during activities associated with additional construction of diversion dikes or associated channels, or the dewatering of potential habitats downstream of a dike. Under those limited circumstances, indirect effects could include loss of foraging habitat, increased predation, and changes in water quality and quantity. Standard mining procedures such as the use of silt barriers across affected stream channels and other similar efforts would minimize any negative impacts that might result from mine-related operations. Likewise, adherence to the Thunder Basin National Grassland Plan (USDA-FS 2002) Standards and Guidelines pertaining to water and wetlands would ensure that leopard frogs and other aquatic organisms present on USDA-FS lands would not be negatively affected by increased sedimentation, degraded water chemistry, or otherwise damaged aquatic habitats.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives **may impact individuals but is not likely to cause a trend to federal listing or loss of viability** within the planning area. As indicated in Table H-3, USDA-FS lands within the larger West Antelope II LBA Tract general analysis area contain very poor to unsuitable habitat for this species. Water sources in the drainages in that area are too temporary and shallow to support tadpoles until metamorphosis, or to allow frogs to successfully overwinter. If present, individual adult leopard frogs may be incidentally killed by vehicles or equipment. Habitat may be enhanced or created during certain mine operations, but water flow and depth associated with existing structures at the adjacent Antelope Mine have not resulted in adequate conditions to support the life cycle needs of this species, and they are not expected to create those conditions anywhere in this LBA tract. As no northern leopard frogs have ever been documented on USDA-FS lands within the overall BLM general analysis area for the West Antelope II LBA Tract,

potential effects are expected to be negligible, if they occur at all.

2. Black-tailed Prairie Dog (*Cynomys ludovicianus*)

The black-tailed prairie dog was removed from USFWS federal listing in 2004. The agency ruled that listing this species may be warranted, but was precluded by higher priority considerations.

Black-tailed prairie dogs historically ranged throughout the Great Plains in short-grass and mixed-grass prairies. This species is also a common resident in the short- and mid-grass habitats of eastern Wyoming (Cerovski et al. 2004). The TBNG, which includes approximately 240 acres in the extreme southeastern portion of the West Antelope II general analysis area, harbors one of the seven major colony complexes remaining in North America. Black-tailed prairie dogs are highly social, diurnal burrowing rodents that typically feed on grasses and forbs. Prairie dogs form colonies that are the main unit of a prairie dog population. This species has the ability to rapidly expand its distribution and population if not limited by pest control practices or disease, and will readily spread into recently disturbed areas. Many species such as the black-footed ferret (*Mustela nigripes*), mountain plover, burrowing owl (*Athene cunicularia*), and swift fox (*Vulpes velox*) are dependent on prairie dogs during a portion of their life cycle. Black-tailed prairie dog occupied range and abundance has declined dramatically, and continues to exhibit a slow decline (NatureServe 2007). Major factors contributing to the decline include disease (sylvatic plague), urbanization, habitat conversion, and control efforts.

Existing Conditions

Sixteen prairie dog colonies (total of approximately 729 acres) are within the overall two-mile perimeter wildlife survey area for West Antelope II (Figure 3-16). Seven colonies were occupied during 2006, eight were unoccupied, and occupancy in one colony was unknown.

One of the 16 colonies straddles USDA-FS lands in T. 40 N., R. 71 W., Section 15 (Figure H-1), in the southeastern corner of the study area. The occupied colony has expanded in recent years, encompassing approximately 93 acres (13 percent of total) in 2006. The eastern-most 41 acres (44 percent) of that colony occurs directly on USDA-FS lands. The Section 15 colony currently meets the 80-acre minimum for black-footed ferret habitat (USFWS 1989). However, the entire coal mine region of the Powder River Basin of northeast Wyoming, including all USDA-FS and surrounding lands within the West Antelope II LBA general analysis area, is beyond the focus area for ferret reintroduction efforts on the TBNG and in the general region (refer to Management Area 3.63-USDA-FS 2002, Grenier 2003). Additionally, some prairie dog colonies in that region are currently experiencing development associated with conventional oil and gas, CBNG, and coal (including open pits) resources. Year-round human activity and disturbance are already present in a few locations.

Direct and Indirect Effects

The current mine plan for the Antelope Mine does not project any new surface disturbance in the Section 15 prairie dog colony through at least 2016. Nevertheless, because the entire colony (93 acres) falls within the USDA-FS general analysis area, that area may be affected by the proposed activities at some point in time. Such impacts could have immediate direct effects on prairie dogs if the occupied colony is buried beneath overburden piles, or subjected to scraping, flooding, or is otherwise impacted in a short timeframe that precludes dispersal prior to disturbance. As those activities are expected to occur incrementally across various portions of the general analysis area, individuals would be able to disperse and would likely inhabit undisturbed portions of the affected colony, or initiate one or more new colonies within the area. Dispersing individuals may be killed or injured by vehicles and heavy equipment during ongoing or future mine operations.

Portions of the Section 15 prairie dog colony and surrounding foraging habitat could be fragmented by small-scale linear disturbances associated with mining activities such as roads, power lines, fences, and pipelines. These disturbances will, however, occur within narrow corridors over relatively short distances, and would be completed within shorter timeframes. New linear disturbances might also create travel corridors that would facilitate movements of mammalian predators, possibly increasing predation risk to prairie dogs.

Existing and new above-ground power lines located within or near the colony would provide perch sites for predatory birds. Applying perch deterrents to those poles would minimize such impacts. Adjacent habitats into which the existing colony could potentially spread may be destroyed by the installation of roads, pipelines, and topsoil stripping prior to mining. However, minor surface disturbance in proximity to the colony would also provide recently upturned soils that could facilitate the expansion of the existing colony or the establishment of new ones, as prairie dogs will readily move into recently disturbed areas.

Post-mining reclamation could have similar potential benefits; prairie dogs have already demonstrated their ability to inhabit reclaimed lands at the Antelope Mine. Given the relative abundance of prairie dogs in the overall region and their tendency to disperse and expand their boundaries, the potential incremental loss of prairie dog acreage (13 percent of total) on and near USDA-FS lands will not likely have adverse consequences for the viability of the regional population. Disturbance and reclamation efforts will occur incrementally in varying locations throughout the permit area as mining progresses through the approved lease.

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 black-tailed prairie dog communities that have had documented mountain plover nesting activity and have been impacted by mining.

All USDA-FS Standards and Guidelines applicable to black-tailed prairie dogs outlined in the TBNG Plan (USDA-FS 2002, page 1-20) would be implemented. To reduce risks and habitat loss for prairie dogs and other wildlife species closely associated with prairie dog colonies, new roads will be aligned outside colony boundaries where possible. If it is necessary to place a new road within a prairie dog colony, the amount of road in the colony will be minimized to the extent that soil, drainage, topographical and other physical factors will allow.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives **may impact individuals but is not likely to cause a trend to federal listing or loss of viability** within the planning area. A portion (41 acres) of one black-tailed prairie dog colony (93 total acres) could be physically disturbed by the proposed activities on and immediately adjacent to USDA-FS lands. That colony represents 13 percent of the total acreage present in the entire West Antelope II LBA general analysis area. Direct injury or mortality may occur to individuals resulting from activities under the Proposed Action or Alternatives. Conversely, some surface disturbances associated with the proposed activities may create habitats favorable for colony expansion or initiation.

3. Swift Fox (*Vulpes velox*)

The swift fox was removed from the USFWS federal listing process in 1995, after extensive field surveys demonstrated that the population was greater than expected. This species is considered to be common within the eastern Great Plains grasslands of Wyoming (Cerovski et al. 2004), though it typically occurs at very low densities. The exact status of the population is unknown but believed to be increasing, especially in the Northern Plains. Swift foxes are largely nocturnal and typically prefer flat to gently rolling, short- or mixed-grass prairies, generally lacking in shrubs or woody vegetation (Cotterill 1997). This species uses multiple den sites year-round for shelter, protection from predators, and rearing young. Burrows of other mammals such as badgers (*Taxidea taxus*), red foxes (*Vulpes vulpes*), and prairie dogs are often used or modified for those purposes. Small to mid-sized mammals constitute the bulk of their diet. Swift foxes have little fear of humans and may den in proximity to human disturbances (residences and busy roadways). This tolerance also makes them susceptible to trapping, vehicle collisions, and attacks by dogs. Major threats faced by the swift fox include habitat loss and degradation, interspecific competition with red fox and coyote (*Canis latrans*), and vehicle

collisions.

Existing Conditions

Swift fox have been observed in northern Converse County and southern Campbell County with more frequency in recent years, and are presumed to breed there. This species has also been documented within the overall TBNG. No specific surveys for swift fox were conducted for this analysis. However, such efforts were completed for other unrelated projects in 2002, approximately 7.0 miles to the north of the USDA-FS lands within the West Antelope II general analysis area. Since at least 1994, annual nocturnal surveys for other species have also been conducted on and near USDA-FS lands and elsewhere within the one-mile perimeter wildlife survey area for the adjacent Antelope Mine, with additional wildlife monitoring surveys occurring at neighboring mines in that region annually since the early 1980s.

Grasslands dominate both the overall BLM general analysis area for the West Antelope II LBA tract and the 240 acres of USDA-FS lands in the southeastern corner of that larger area. However, no swift foxes had been recorded in the combined area prior to 2005. In early October that year, biologists with Jones & Stokes (formerly Thunderbird Wildlife Consulting) saw two separate individuals (adult and juvenile) walking and hunting on a grassy hill within and near the northern portion of the overall West Antelope II general analysis area in T. 41 N., R. 71 W., NW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 22 and NE $\frac{1}{4}$ SW $\frac{1}{4}$ Section 22, respectively. The foxes were observed during spotlighting surveys for lagomorphs (hares and rabbits) conducted for the annual wildlife monitoring program at the adjacent Antelope Mine. A pair of swift foxes was observed in the adjacent sections to the west and south of Section 22 during similar spotlight surveys conducted in both 2006 and 2007.

The relatively large blocks of grasslands interspersed with sparse sagebrush-grasslands on and near the 240 acres of USDA-FS lands in the West Antelope II general analysis area represent suitable swift fox habitat, especially where associated with more gentle topography. Burrows within the existing black-tailed prairie dog colony, and scattered badger or red fox burrows, could be used by swift foxes as den or shelter sites. Potential denning, shelter, and foraging habitats may be physically disturbed by the proposed activities. Despite these characteristics, no swift foxes have ever been recorded on the 240 acres of USDA-FS lands analyzed in the West Antelope II LBA tract EIS. All of the observations described for the larger BLM general analysis area were 3.0 miles or more to the north of those USDA-FS lands.

Few other swift fox sightings have been recorded elsewhere within the surrounding region during specific surveys or incidental to other searches at local mines over the last 26 years. Those efforts were conducted as part of annual wildlife monitoring by contract and USDA-FS biologists on private and federal lands in the area. Swift foxes were documented approximately 16.0 miles north-northwest of the West Antelope II EIS USDA-FS lands between

1995 and 1997. One sighting each was made in T. 43 N., R. 72 W., SE $\frac{1}{4}$ Section 20 and T. 43 N. R. 71 W., SE $\frac{1}{4}$ Section 23 and SW $\frac{1}{4}$ Section 14 (USDA-FS 2003) during that period. In March 2002, a single swift fox was observed in T. 42 N. R. 70.W., SE $\frac{1}{4}$ Section 15 during spotlight trapping efforts at the North Antelope Rochelle Mine, approximately 11.0 miles northeast of the USDA-FS lands boundary. Reports from all of those studies are already on file with the Douglas Office of the USDA-FS, and with WDEQ-LQD.

Direct and Indirect Effects

Suitable but unoccupied swift fox habitat is present on and near the 240 acres of USDA-FS lands considered in this analysis. Should this species be present on those lands in the future, direct loss of or injury to individuals foraging or denning within, or passing through that area could result from vehicle collisions or encounters with equipment associated with mine-related activities. Swift fox are relatively tolerant of human activities, but may avoid areas directly affected by mine operations as human presence and noise escalate with active mining. As the population size and residency status of the individuals in the area are largely unknown, some swift fox may remain within undisturbed habitats in the vicinity of mining encroachment.

The Proposed Action or Alternatives could disturb known and potential swift fox foraging, denning, or shelter habitat in the overall BLM general analysis area and the 240 acres of USDA-FS lands in the southeastern corner of the larger area, respectively. Those habitats could be removed, altered, or fragmented to varying degrees by one or more mine- or non-mine-related activities such as topsoil removal and a variety of linear disturbances (e.g., roads, fences, power lines, and pipelines). However, the latter disturbances will occur within narrow corridors over relatively short distances, and will typically be completed within a few days. Linear disturbances and habitat alterations could also provide convenient travel corridors and habitat for larger mammalian predators that could compete with swift foxes for prey species. The type, timing, location, and extent of habitat disturbance will vary throughout the general analysis area and on USDA-FS lands as mining operations progress. Reclamation of disturbed areas will occur incrementally as mining is completed in a given portion of the area, and will eventually provide additional foraging and potential denning habitat for the swift fox. Surface disturbing activities may result in a short-term, localized decrease in prey base (small rodents and voles), but due to their high reproductive potential and tendencies to re-establish and adapt to disturbed and reclaimed areas, prey numbers should increase quickly after the disturbance. Should swift fox be documented on or adjacent to the 240 acres of USDA-FS lands in the West Antelope II LBA tract, that agency would determine whether species-specific Standards and Guidelines outlined in the TBNG Plan (USDA-FS 2002, page 1-20) would apply.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives **may impact individuals**

but is not likely to cause a trend to federal listing or loss of viability within the planning area. The 240 acres of USDA-FS lands within the overall BLM general analysis area for the West Antelope II LBA tract are currently considered as suitable but unoccupied habitat for the swift fox (Table H-3). No fox sightings have been documented on those USDA-FS lands during specific and incidental surveys conducted over the last 27 years (1980-2007). Only seven sightings have been recorded within or near the overall West Antelope II general analysis area during that period (all since 2005), and all were at least 3.0 miles north of the USDA-FS lands in the southeastern corner of that larger area.

4. Long-billed Curlew (*Numenius americanus*)

Long-billed curlews breed from interior British Columbia and southern Alberta through southern Manitoba, south to central California, and east to western North Dakota, central South Dakota, central Nebraska, western Kansas, northeastern New Mexico, and northern Texas (Dechant et al. 2003a). The long-billed curlew is a relatively uncommon summer resident of grasslands and sagebrush-grasslands in Wyoming (Cerovski et al. 2004). Curlews are ground nesters, and require large open expanses of grassland, with relatively low vegetation and few shrubs in which to nest (Hill 1998). The nest is typically a shallow scrape or depression, thinly lined with grass, weeds or cow dung, typically near water or moist areas.

Curlews use historically occupied sites each year, and some individual birds may reuse the same territories from year to year (Dechant et al. 2003a). Curlews primarily feed upon insects but also eat other invertebrates, small crustaceans, toads, and eggs and nestlings of other birds. This species forages in grasslands, wet meadows, prairie dog colonies, and occasionally along the margins of wetlands. Lakeshores and river valleys are often used during fall as migration staging areas (Hill 1998). Although some populations may be declining, overall population trends suggest long-billed curlew numbers are stable or increasing slightly. The major factor affecting curlew populations is habitat destruction and fragmentation.

Existing Conditions

Long-billed curlews are uncommon summer residents within the TBNG. The area evaluated for this analysis, which includes 240 acres of USDA-FS lands and a surrounding ¼-mile perimeter, is dominated by potential habitat (expansive, open, level to gently rolling grasslands with short vegetation) for this species. However, few individuals have been observed in the region during annual wildlife monitoring in that area over the last two decades (Jones & Stokes data, currently on file with the USDA-FS and WDEQ-LQD). Most of those sightings occurred during spring months north of the USDA-FS lands, and were likely individual migrants or non-breeding adults. No significant wetlands (i.e. large lakes) or other conditions that might attract large numbers of curlews during migration exist within the area evaluated for this analysis.

No nesting occurrences have been documented in northern Converse County (Cerovski et al. 2004), including the USDA-FS general analysis area and adjacent lands. Potential nesting habitat is poor to marginal throughout the general analysis area, including on USDA-FS lands themselves. Foraging habitat is present within the existing prairie dog colony and areas of heavily grazed grasslands and sagebrush-grasslands on USDA-FS lands and elsewhere within the West Antelope II LBA tract general analysis area. CBNG development and conventional oil and gas production are increasing throughout the region, with active mining (including open pits) also occurring in the immediate vicinity. Potential, low quality long-billed curlew nesting and foraging habitats will be disturbed by the Proposed Action and Alternatives 1 and 2.

Direct and Indirect Effects

Given the lack of sightings of, and limited potential for, long-billed curlews on and near USDA-FS lands over the last 13 years (1994-2006), the Proposed Action and Alternatives are unlikely to cause any direct injury or mortality to this species. If present, individuals or nests could be injured or destroyed by vehicles and equipment associated with ongoing and future mining activities. Individuals may also be displaced by human activities and noise associated with mining. Linear habitat disturbances (i.e., roads or fence lines) can provide convenient travel corridors for mammalian predators, thus increasing the predation risk to nests, nestlings, or adults that are present. Potential foraging and nesting habitats may be disturbed, removed, or fragmented by mining activities. The type, timing, location, and extent of habitat disturbance will vary throughout the general analysis area as operations progress. Reclamation of disturbed areas will occur incrementally as mining is completed in a given portion of the mine, and will eventually mitigate impacts to some degree. Antelope Mine's reclamation plan would incorporate the replacement of jurisdictional wetland acreages existing prior to mining with at least equal types and numbers of wetland acreages. The creation of wetland habitats, especially where adjacent to grassland habitats, could provide additional (although limited) foraging areas for curlews.

As sightings have been infrequent over time, and long-billed curlew nests have not been documented within USDA-FS lands or other lands within or near the West Antelope II LBA tract general analysis area, species-specific Standards and Guidelines outlined in the Grassland Plan (USDA-FS 2002) would not apply.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives **may impact individuals but is not likely to cause a trend to federal listing or loss of viability** within the planning area. As this species appears to be an infrequent visitor to the general analysis area, and good quality foraging and nesting habitat is not present within the area, impacts to this species are likely to be minimal. Loss, degradation, or fragmentation of potential foraging habitat and potential

collisions with vehicles may occur. Reclamation of wetlands and grasslands may create limited foraging or nesting habitat.

5. Ferruginous Hawk (*Buteo regalis*)

Ferruginous hawks breed throughout much of the western United States and portions of three Canadian provinces (Johnsgard 1990). This species nests throughout Wyoming (Cerovski et al. 2004) and occupies portions of the state during winter. Large expanses of grassland and shrubland, where livestock grazing (vs. cultivation) is the predominant land use, provide the most suitable habitat (Schmutz 1989, Johnsgard 1990). Most ferruginous hawks in the Powder River Basin nest on the ground (usually elevated sites, though some pairs nest in small trees). Typical nest sites include hilltops, rock outcrops, eroded creek banks, small trees, and even relatively level ground. The ferruginous hawk relies primarily on two mammalian families for the majority of its prey: *Leporidae* (rabbits and hares) and *Sciuridae* (ground squirrels and prairie dogs). Numerous nests can occur within the territory of a single pair, and ferruginous hawks often reuse nests for many years.

This species may be sensitive to human disturbance, especially during the nesting period (White and Thurow 1985). This sensitivity can be heightened in years of low prey abundance. Accurate information regarding the trend for the ferruginous hawk is limited and mixed. Although some populations may be declining (Bechard and Schmutz 1995), overall population trends suggest numbers are stable or increasing (NatureServe 2007). Major factors affecting ferruginous hawk populations include habitat destruction and fragmentation, and human disturbance.

Existing Conditions

Ferruginous hawks have nested in the vicinity of the Antelope Mine during 23 of the last 25 years, and fledged young in 18 of those years. In the last five years, four to eight pairs nested within the two-mile perimeter wildlife survey area (which includes USDA-FS lands). A total of 64 ferruginous hawk nest sites in at least 18 different territories have been documented within that two-mile survey area over the last 25 years. Thirty-four nests in at least 10 territories were physically intact within the Antelope Mine two-mile perimeter wildlife survey area in 2006; 10 territories were active that year, with a total of eight young fledged. Nesting activity in 2005 and 2006 was greater than during the previous three years, likely in response to remarkably high lagomorph populations in both years.

Direct and Indirect Effects

No ferruginous hawk nests are present on USDA-FS lands within the BLM study area. Five of the 64 total ferruginous hawk nest sites documented for the Antelope Mine through 2006 fall within one-quarter mile of USDA-FS lands (Figure H-1); these nest sites are either within the general analysis area (maximum potential for surface disturbance) for the West Antelope II LBA tract or within currently permitted areas. Four nests fall within one territory (FH5),

with the remaining nest in a different territory (FH1).

Four of the five sites nearest the USDA-FS lands had nest material present during 2006. However, all five meet USDA-FS criteria as “active” (occupied during at least one of the last seven years [2000-2006]). One of those five nest sites was used during 2006; birds incubated eggs but did not hatch young. All five locations could be physically destroyed by mining under the Proposed Action or Alternatives, though such disturbances are not projected to occur on or within on-quarter mile of the USDA-FS lands through at least 2016.

Both territories include alternate nest sites beyond USDA-FS lands that have been actively used in recent years. One territory (FH5) includes alternate nests that will not be disturbed physically or visually by future mining within the West Antelope II LBA tract. However, all alternate nest sites within the other territory would be impacted by future mine-related activities. Such disturbances could negatively impact the reproductive success of ferruginous hawks nesting in the area.

Over time, the Antelope Mine has avoided, where possible, or mitigated mining impacts on raptor nests through a variety of means. The mine has monitored nesting raptor populations, maintained and implemented current USFWS approved Raptor Mitigation Plans, adjusted operations to provide temporal and spatial buffers around raptor nests, and ensured that new power lines at the mine conform to current Avian Power Line Interaction Commission (APLIC) guidelines. Provided those practices are continued, direct impacts on both ferruginous hawks and active nest sites will be minimized. The most probable source of potential impact to ferruginous hawks would be an increase in injuries and fatalities of individuals foraging within the general analysis area due to vehicle collisions associated with ongoing or future mining and non-mining activities. The use of existing roads in the area, when possible, would help to minimize this risk.

The West Antelope II lease area would expand Antelope Mine and could potentially impact up to 6,309.18 total new acres during the life of the mine; approximately 240 acres (4%) are managed by the USDA-FS. Habitat loss, degradation, and fragmentation would result from a variety of large- and small-scale mining operations (e.g., topsoil stripping, drilling, reservoir construction, etc.). Potential nesting and foraging habitat might also be fragmented by linear disturbances such as the construction, maintenance, and removal of roads, fences, power lines, and pipelines. Those disturbances could also create new travel corridors to mammalian predators that reside in or pass through the area. However, such disturbances would occur within narrow corridors over relatively short distances, typically over a period of days. Additionally, those structures are often constructed immediately prior to the removal of similar features elsewhere in the area, often resulting in minimal or no net gain of new linear disturbances. All mine-related habitat disturbances would shift throughout the expanded permit area as operations progress. Reclamation of

disturbed areas would occur incrementally as resource recovery is completed in a given portion of the mine, and would mitigate impacts to some degree. Surface disturbing activities could also result in a short-term, localized decrease in the prey base (lagomorphs and rodents) for ferruginous hawks. However, due to their high reproductive potential and tendencies to re-populate and adapt to disturbed and reclaimed areas, prey numbers should increase quickly after the disturbance.

USDA-FS Standards and Guidelines would be implemented and offer additional protections for active nests; they would apply only to activities outside of the lease. These factors should help ensure that the Proposed Action and Alternatives do not significantly degrade the quality of existing ferruginous hawk territories and nest sites. Standards and Guidelines specific to ferruginous hawks outlined in the TBNG Plan (USDA-FS 2002, page 1-20-21) are as follows:

73. To help prevent abandonment, reproductive failure or nest destruction, prohibit development of new facilities within 0.25 mile (or line of sight) of active ferruginous hawk nests. For the ferruginous hawk, a nest is no longer considered active if it is known to have been unoccupied for the last seven years. This does not apply to pipelines, fences and underground utilities.

74. To help reduce disturbances to nesting ferruginous hawks, prohibit the following activities within 0.5 mile (or line of sight) of active ferruginous hawk nests from 1 March through 31 July: construction (e.g., roads, water impoundments, oil and gas facilities), reclamation, gravel mining operations, drilling of water wells, and oil and gas drilling.

75. To help reduce disturbances to nesting ferruginous hawks, do not authorize the following activities within 0.5 mile (line of sight) of active ferruginous hawk nests from 1 March through 31 July: construction (e.g., pipelines, utilities, fencing), seismic exploration, and workover operations for maintenance of oil and gas wells.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives **may impact individuals but is not likely to cause a trend to federal listing or loss of viability** within the planning area. Mine-related activities will not physically disturb any ferruginous hawk nest sites on USDA-FS lands themselves. However, such activities could impact up to five nests within the West Antelope II LBA tact general analysis area that abuts USDA-FS lands. Some individuals or pairs may experience disturbance, destruction, or fragmentation of nesting and foraging habitat. Increased disturbance to individuals due to human activity may also occur. However, several factors should minimize the potential mining-related impacts on this species, including the availability of alternate

nest sites located further away from pending disturbance in each affected territory, implementation of USFWS and USDA-FS approved mitigation measures, reclaiming habitats as soon as feasible, encouraging nesting within mine reclamation lands, and continued monitoring of this species to ensure that mitigation methods are applied when necessary.

6. Burrowing Owl (*Athene cunicularia*)

Burrowing owls breed from southern Alberta to southwestern Saskatchewan, south through east-central Washington, central Oregon, and southern California, and east to eastern North Dakota, west-central Kansas, and Texas (Klute, et al. 2003, pg 7). The burrowing owl is a summer resident of open rangeland habitats throughout Wyoming (Cerovski et al. 2004). This species requires burrows of fossorial mammals, primarily badgers and prairie dogs, for nesting and roosting (Klute, et al. 2003, pg 12).

Most burrowing owl nests within the TBNG are located within prairie dog colonies (USDA-FS 2003). Burrowing owls typically reuse traditional nesting areas. Burrow mounds, shrubs, fence posts or boulders may be used as observation perches. This species is usually tolerant of human activity but is vulnerable to predation by pets (cats, dogs). Burrowing owls forage within a variety of habitats, including cropland, pasture, prairie dog colonies, fallow fields, and sparsely vegetated areas. This species is often active during daylight hours. Insects and small mammals (mice and voles) are the owls' primary prey items. Burrowing owl populations have been declining throughout its range, primarily due to habitat loss.

Existing Conditions

Burrowing owls are common summer residents within the TBNG (Cerovski et al. 2004). This species was first recorded nesting in the Antelope Mine two-mile perimeter wildlife survey area in 1991, and owls have nested in that general vicinity during 14 of the last 16 years. All known burrowing owl nest sites throughout the entire West Antelope II LBA tract were in prairie dog burrows, and are therefore considered intact. Four additional artificial nest boxes have been constructed in the two-mile perimeter wildlife survey area for mitigation purposes since 1994, but no owls have ever been observed at or near them.

One burrowing owl site (BO5) has been documented in the prairie dog colony on USDA-FS lands in T. 40 N., R. 71 W., Section 15 (Figure H-1). That site was discovered in 1996, and six young fledged that year. At least one adult was observed in the same colony in 1997 and again in 2006, but no active nests have been documented there since 1996. As the nest area has not been used for the last ten consecutive years, it is considered "inactive" by the USDA-FS definition for this species (unoccupied during the current or most recent nesting season). One of the four artificial nest sites (BO11) is located in reclaimed lands within one-quarter mile of the USDA-FS. No owls have ever used that nest box. Full details of all burrowing owl nest sites have been

provided in the Annual Wildlife Report for the Antelope Mine each year, and are on file with both the USDA-FS Douglas, Wyoming Ranger District and WDEQ-LQD in Cheyenne, Wyoming.

Direct and Indirect Effects

One natural burrowing owl nest site is present on USDA-FS lands and thus could be impacted by the leasing of the West Antelope II LBA tract. That nest site has not been active since 1996. Both USDA-FS Standards and Guidelines (USDS-FS 2002) and the Antelope Mine state mining permit stipulate that clearance surveys will be conducted and approved by the appropriate agencies before any colony is disturbed during the breeding season. That process will preclude most direct impacts to nesting burrowing owls in that area.

Because burrowing owls are active during daylight hours, the most probable source of direct impacts would be the death of, or injury to, individuals fleeing heavy equipment, or being killed or injured by equipment while feeding or moving through the mine area. Burrowing owls are generally tolerant of human activities, but increased presence and noise, especially during the nest initiation period, may displace individuals or inhibit nesting proximate to mine operations. Foraging could also be hindered within these areas, especially where mining activities occur near prairie dog colonies.

Mining could eventually disturb or eliminate all 93 acres of potential alternate nesting habitat (prairie dog colony) on USDA-FS lands or in the overlapping West Antelope II LBA tract general analysis area. However, that colony represents only 13% of the total acreage within the two-mile perimeter wildlife survey area for the Antelope Mine. Additionally, the tendency of prairie dogs to quickly colonize nearby areas when their colonies are disturbed would create new nesting habitat for burrowing owls. Overall, nesting and foraging habitats will be incrementally affected by a variety of large-and small-scale operations. The type, timing, location, and extent of habitat disturbance will vary throughout the general analysis area as mining operations progress, thus providing opportunities for burrowing owls to relocate to other suitable habitat within the immediate area.

Reclamation will proceed incrementally as areas are mined and activities move to new locations within the mine area. Both activities will create loose soil that should be attractive to dispersing prairie dogs (potential habitat source), at least in the short term. Reclamation of disturbed areas will occur incrementally as resources are extracted in a given portion of the mine, and will eventually mitigate habitat impacts to some degree. However, to date, burrowing owls have rarely been documented nesting within reclaimed habitats at surface mines in northeast Wyoming.

Linear disturbances such as the construction, maintenance, and removal of roads, fences, power lines, and pipelines could temporarily disturb nesting or foraging individuals. Such disturbances however, would occur within narrow

corridors over relatively short distances, typically over a period of days. Surface disturbing activities could also result in a short-term, localized decrease in the prey base (lagomorphs and rodents) for burrowing owls. However, due to their high reproductive potential and tendencies to re-populate and adapt to disturbed and reclaimed areas, prey numbers should increase quickly after the disturbance.

If nesting burrowing owls are documented on or near USDA-FS lands, USDA-FS Standards and Guidelines applicable to this species would be implemented to offer additional protections beyond those outlined in the USFWS approved Raptor Mitigation Plan for the Antelope Mine. Annual monitoring of known burrowing owl nest sites within the one-mile perimeter wildlife survey area for the mine, including USDA-FS and adjacent lands, and other nearby colonies will continue through the life of the mine to document their histories of occupancy and production.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives **may impact individuals but is not likely to cause a trend to federal listing or loss of viability** within the planning area. Disturbance, fragmentation, and alteration of foraging and potential nesting habitats will occur. One inactive natural nest site within 93 acres of known and potential nesting habitat (prairie dog colony) could be disturbed under the Proposed Action or Alternatives. However, most (87%) prairie dog acreage is located outside of the USDA-FS lands.

The Antelope Mine has avoided, where possible, and mitigated such impacts in the past through intensive monitoring of both populations and specific nest sites, implementation of USFWS approved mitigation measures, and adjusting operations to provide temporal and spatial buffers around raptor nests (including burrowing owl nests). Mining activities and noise may disturb individuals inhabiting the lease area, thus inhibiting potential nesting or foraging in proximity to lands with ongoing development. Potential collisions with vehicles might also occur, though none have been recorded in the area to date.

7. Chestnut-collared Longspur (*Calcarius ornatus*)

The breeding range of the chestnut-collared longspur extends from southern Alberta to southern Manitoba, south to west-central Colorado, and east through North Dakota and South Dakota to western Minnesota (Dechant et al. 2003b). The chestnut-collared longspur is a common summer resident of the eastern plains of Wyoming (Cerovski et al. 2004). This species prefers native grasslands as breeding sites, inhabiting open prairie and avoiding excessively shrubby areas. Grasslands with dense litter accumulations are avoided (Dechant et al. 2003b). Scattered shrubs are often used as singing perches. Nests are typically placed in areas of sparse vegetation (less than 20-30 cm), but usually with a taller grass component than sites preferred by McCown's longspurs. Nests are on the ground in depressions, often placed beside cattle

dung pat, small shrub, or under a clump of grass (Hill and Gould 1997). Male fidelity to breeding areas has been observed. Chestnut-collared longspurs feed primarily on seeds (especially grasses), insects, and spiders. This species is generally tolerant of short-term intrusion at the nest site but may desert if disturbed during nest building or egg-laying (Hill and Gould 1997). High rates of predation on eggs and nestlings have been reported and pesticides have been shown to reduce hatching success. The chestnut-collared longspur breeding range has contracted and long-term data suggests population declines (Hill and Gould 1997). These declines have been attributed to loss of native prairie habitat, and conversion to cropland and urban development.

Existing Conditions

Chestnut-collared longspurs are common summer residents within the TBNG. This species has often been documented on and near USDA-FS lands in the southeastern corner of the West Antelope II LBA BLM study area during annual monitoring surveys since at least 1994. Although the prairie dog colonies and grasslands in that area do not represent prime nesting habitat, these longspurs likely do breed and forage in the area. The height and composition of grasslands throughout much of the remainder of the USDA-FS lands and two-mile perimeter wildlife survey area for the Antelope Mine could also provide suitable habitat for this species, though few observations have been made in those areas over time.

Direct and Indirect Effects

Fatalities or injury to individuals may occur due to collisions with vehicles or equipment associated with ongoing and future mining activities. If nests are present, nests and eggs may be crushed or destroyed, and young killed or injured by equipment operations in nesting areas during the breeding season. Increased human activity and noise could inhibit foraging or nesting within portions of USDA-FS lands, and will likely displace individuals during periods of intense activities. Over the life of the mine, potential nesting and foraging habitats in the general analysis area (including up to 93 acres of existing black-tailed prairie dog colony overlapping the USDA-FS lands) could be disturbed, destroyed, altered, or fragmented. Specifically, these habitats will be incrementally affected by a variety of large- and small-scale operations (e.g. topsoil stripping, drilling, reservoir or diversion channel construction, or the construction of facilities).

The type, timing, location, and extent of habitat disturbance will vary throughout the USDA-FS general analysis area as mining operations progress. Reclamation of disturbed areas will occur incrementally as resources are extracted in a given portion of the mine. Within one to two years, newly reclaimed areas may create good quality, short-duration nesting habitat for chestnut-collared longspurs. However, as these sites mature, they would become less suitable as nesting habitat for this species. Linear disturbances such as the construction, maintenance, and removal of roads, fences, power lines, pipelines, and diversion channels could provide convenient travel

corridors for mammalian predators, thus increasing the predation risk to nesting adults, eggs, and nestlings. Most linear disturbances would occur within narrow corridors over relatively short distances, typically over a period of days.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives **may impact individuals but is not likely to cause a trend to federal listing or loss of viability** within the planning area. Some individuals or pairs may be displaced from portions of USDA-FS or adjacent lands and may experience disturbance, destruction, or fragmentation of nesting, foraging, or brood rearing habitat. The creation of linear corridors through nesting habitat may increase nest predation. Injury or mortality may occur to eggs, young, or adults resulting from mining operations and/or vehicle collisions within nesting habitat during the breeding season. However, mining disturbances would not likely limit the movement of individuals within the vicinity. This species has been documented regularly in the area despite ongoing mining activities nearby.

8. McCown's Longspur (*Calcarius mccownii*)

McCown's longspurs breed from southern Alberta and southern Saskatchewan, south through Montana, eastern and central Wyoming, and north-central Colorado, and east to western Nebraska, north-central South Dakota, and southwestern North Dakota (Dechant et al. 2003c). This species is a common summer resident of the eastern plains and great basin-foothills grasslands, basin-prairie shrublands, and agricultural areas throughout most of Wyoming (Cerovski et al. 2004). Specifically, this species requires open habitats such as sparsely vegetated, low structured grasslands, and heavily grazed pastures containing a moderate bare ground component for nesting and foraging. Nest sites are typically a natural or shallow scraped depression on the ground placed in the open or beside vegetation such as bunch grasses, cacti, or shrubs. McCown's longspurs feed on seeds of grasses and forbs, insects, and other arthropods. No strong data suggests breeding site fidelity although some individuals may return to the general nesting area in subsequent years.

Individuals vary in response to human intrusion at nest sites, but appear to be relatively more tolerant than most grassland songbird species. High rates of predation on eggs and nestlings occur especially where nests are associated with vegetative structure. Nestlings may also be directly poisoned where insecticides are sprayed in nest areas (With 1994). Populations are declining, especially within the northern portion of the range. Factors directly affecting the McCown's longspur include the reduction of breeding habitat due to overgrazing, control of prairie fires, plowing, development, and excessive use of pesticides. Conversion of short-grass prairie to agriculture and urban development is the most important factor (With 1994).

Existing Conditions

McCown's longspurs are also common summer residents within the TBNG. This species has frequently been documented at Antelope and other nearby surface coal mines over the years, and is commonly seen during spring and summer in the prairie dog colony that straddles USDA-FS lands in the southeastern corner of the West Antelope II LBA tract (T. 40 N., R. 71 W., Section 15). Although no McCown's longspur nests have been found in that area, it is highly likely that this species nests and forages on or immediately adjacent to USDA-FS lands. Singing and foraging males were regularly heard and observed within grassland habitats during annual wildlife monitoring surveys conducted since at least 1994. Short-grass prairie, prairie dog colonies, and very sparse sagebrush habitats within the area represent suitable nesting and foraging habitat for this species. These areas would be especially attractive to longspurs during periods of heavy grazing and drought, when grass height would be suppressed. The height and composition of vegetation throughout the remainder of the area is generally too tall and dense to provide suitable habitat for McCown's longspurs.

Direct and Indirect Effects

The direct and indirect effects to McCown's longspurs would be the same as those described above for the chestnut-collared longspur.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives **may impact individuals but is not likely to cause a trend to federal listing or loss of viability** within the planning area. Some individuals or pairs may be displaced from USDA-FS or adjacent lands and may experience disturbance, destruction, or fragmentation of nesting, foraging, or brood rearing habitat. The creation of linear corridors through nesting habitat may increase nest predation. Injury or mortality may occur to eggs, young, or adults resulting from mining operations and/or vehicle collisions within nesting habitat during the breeding season. However, mining disturbances would not likely limit the movement of individuals within the vicinity. This species has been documented regularly in the area despite ongoing mining activities nearby.

9. Greater sage-grouse (*Centrocercus urophasianus*)

The Greater sage-grouse occurs year-round throughout non-forested regions of Wyoming (Cerovski et al. 2004). Sage-grouse rely on a variety of habitats within sagebrush dominated landscapes to reproduce and survive throughout the year. Early in the spring, grouse gather at breeding display sites called leks. Leks are usually in open areas (playas, ridge tops, sparse sagebrush, or burned areas) that are surrounded by dense sagebrush and escape cover. The surrounding area also typically represents nesting, loafing, and foraging habitat.

After being bred, hens typically scratch out a nest under sagebrush (Connelly et al. 1991) within three kilometers of the lek (Schroeder et al. 1999). Nests in

some portions of sage-grouse range are typically placed under sagebrush with average height of 36-79 cm (Schroeder et al. 1999). However, research conducted within the Southern Powder River Basin (Brown and Clayton 2004) indicated that, although shorter sagebrush was present at nest sites, grouse selected shrubs ranging from 55-61 cm in height under which to place nests. Re-nesting may occur if the nest is destroyed early during the laying or incubation period. Nest success is enhanced where both sagebrush and residual grass cover are taller and denser (Gregg et al. 1994). Sage-grouse exhibit high fidelity to seasonal ranges, and may return to the same area to nest in subsequent years.

For the first month after hatching, the young depend on relatively open sagebrush stands with an abundance of forbs and insects, especially ants and beetles (Drut et al. 1994, Schroeder et al. 1999). Late-season brood rearing habitats, such as wet meadows and bottomlands, are more mesic and support greater forb cover (Drut et al. 1994). Sage-grouse use a variety of habitats during fall, and the incidence of sagebrush in their diet increases as forbs become less available. During winter, grouse feed upon sagebrush leaves almost exclusively. Winter range is characterized by large expanses of dense, exposed sagebrush. Where snow accumulations are significant, gentle south- and west-facing slopes or windblown ridges are preferred.

Breeding populations of this species have declined by at least 17-47% throughout much of its range (Connelly et al. 2004). Within Wyoming, sage-grouse populations have generally declined over the past four decades. However, sage-grouse population estimates specifically pertaining to the TBNG suggest an overall increase in individuals since 1995. This same general trend was observed both statewide and within the Northeast Wyoming Sage-Grouse Local Working Group area.

The Northeast Wyoming Sage-grouse Local Working Group identified habitat fragmentation and degradation, disturbance and direct mortality as major influences affecting sage-grouse (NWSGWG 2006). The group identified oil and gas development, vegetation management, invasive plants, and weather as those factors with the most influence on the northeast Wyoming sage-grouse populations and those that may most effectively be addressed to provide the greatest benefit for sage-grouse conservation in northeast Wyoming (NWSGWG 2006).

Existing Conditions

The Greater sage-grouse is a common year-round resident within much of the TBNG, but is rare in the vicinity of the West Antelope II LBA tract and the adjacent Antelope Mine. Potential sage-grouse habitat is limited throughout the entire West Antelope II LBA tract general analysis area. Grasslands are the dominant vegetation community within the entire two-mile perimeter wildlife survey area for the Antelope Mine (including USDA-FS lands), occupying 85% of that area.

No large expanses of contiguous sagebrush are present within several miles of LBA tract. Sagebrush habitats that do occur are quite limited and of poor quality. Those shrublands are primarily limited to relatively small and somewhat sparse patches scattered across the northern half of the West Antelope II LBA tract, and some sparse shrubs sprinkled throughout the short-grass prairie and prairie dog colonies in the southeastern portion of the area (the vicinity of USDA-FS lands). Additional small, fragmented stands of sparse sagebrush are present elsewhere in the two-mile perimeter wildlife survey area for the Antelope Mine, but most are overshadowed by short- and mid-grass communities, and are isolated from the larger contiguous sagebrush grasslands regularly inhabited by sage-grouse. Although some sagebrush habitat is present within the West Antelope II LBA tract general analysis area, little, if any, potential sage-grouse habitat would be disturbed by the Proposed Action and Alternatives.

Potential sage-grouse habitat is also limited within the USDA-FS lands and their two-mile perimeter of interest for that species. Grasslands are the dominant vegetation community in the region, with no large expanses of contiguous sagebrush occurring within several miles of that area. Sage stands that are present on or near USDA-FS lands are relatively short and sparse, with only marginal understory composition for adequate nesting habitat. Shrubs are not tall or dense enough to provide quality winter habitat in deep snows, and the lack of surface water in the ephemeral drainages in that area provides minimal suitable brood-rearing habitat. Overall, little, if any, potential sage-grouse habitat would be disturbed by the Proposed Action and Alternatives on or near USDA-FS lands.

Baseline (1978-1979, 1998, 2003) and annual monitoring studies (1982-2006) have repeatedly demonstrated that sage-grouse observations are rare within the Antelope Mine one- and two-mile perimeter wildlife survey areas. As described previously, annual monitoring surveys for sage-grouse leks conducted for the adjacent Antelope Mine encompassed the entire USDA-FS parcel and much of its surrounding perimeter every year since 1982. No leks were observed in that region during any survey year. Additionally, WGFD records (obtained from D. Thiele, Regional Biologist, WGFD, Buffalo, WY) and USDA-FS records have not documented any sage-grouse leks within the approximately 80.5 mi² area that encompasses the two-mile perimeter wildlife survey area for the Antelope Mine. The nearest known sage-grouse lek is the Steckley Road Complex, approximately 3 miles away in T40N R70W, SE NW Section 29. Telemetry data collected on radio-collared grouse at the nearby North Antelope Rochelle Mine throughout the last six years (2001-2006) shows no sage-grouse locations within several miles of the West Antelope II LBA tract during that period (Brown and Clayton 2004, McKee 2006).

Isolated and sporadic observations of sage-grouse, both with and without broods, were made in the north-central portion of the West Antelope II LBA tract general analysis area in T. 41 N., R. 71 W., SE¼ Section 21 in the early

1980s. One grouse sighting occurred in a draw in T. 40 N., R. 71 W., SW $\frac{1}{4}$ Section 21, approximately 1.5 miles southwest of the USDA-FS lands, in the early 1990s. In early July 2006, grouse droppings and feathers were seen in a sage draw approximately 1.75 miles southeast of the USDA-FS lands, in T. 40 N., R. 71 W., NW $\frac{1}{4}$ Section 25. The prevalence of sign in that area indicated that multiple grouse had recently foraged in that drainage. Despite these regional records of sage-grouse, no grouse or their sign (droppings, feathers, etc.) were ever documented on USDA-FS lands themselves or the associated general analysis area for the West Antelope LBA tract, or within 1.5 miles of USDA-FS lands.

In addition to active mining, existing corridors associated with oil and gas (CBNG and conventional) developments, low use two track roads, all weather roads, fence lines, and overhead H-frame transmission and distribution power lines currently fragment portions of the two-mile perimeter wildlife survey area surrounding both USDA-FS lands and the adjacent Antelope Mine (Figure 3-16). Other land uses in the general vicinity include livestock grazing (both cattle and sheep), outfitted hunting and trapping, and limited recreation in the extreme southern portion of that two-mile perimeter. Oil and gas development is most prevalent in the northern portion of the two-mile perimeter wildlife survey area for the mine, while livestock grazing and prairie dog shooting are the primary disturbances occurring in the south. Active mining dominates the landscape to the northeast of the USDA-FS lands, while reclaimed lands occur to the east.

Direct and Indirect Effects

More than 25 years of annual monitoring have fully documented that sage-grouse do not inhabit the USDA-FS lands in the southeastern portion of the West Antelope II LBA BLM study area or general analysis area. Given the absence of leks within three miles of that area, the paucity of grouse sightings in the general region over nearly three decades of monitoring, the lack of evidence (sign) of grouse use of USDA-FS lands and elsewhere in the BLM study area, as well as the minimal quantity and marginal quality of potential sage-grouse habitat present in the area, the direct and indirect effects of the Proposed Action and Alternatives are similar to those for the No Action Alternative.

Likewise, as no sage-grouse have ever been documented on or within 1.5 miles of USDA-FS lands analyzed in this EIS, all corresponding stipulations outlined in the TBNG Plan (USDA-FS 2002) would be waived. Should sage-grouse move into USDA-FS lands analyzed in this EIS in the future, agency Standards and Guidelines would offer appropriate protections for the species and its important habitat. However, under the current conditions and documented absence of this species, mining USDA-FS lands within the West Antelope II LBA tract would not adversely impact sage-grouse populations in the region, nor would it conflict with the current TBNG Plan or any future objectives to manage the area for this species.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives **may impact individuals but is not likely to cause a trend to federal listing or loss of viability** within the planning area. Nearly three decades of annual monitoring have documented that sage-grouse do not inhabit the USDA-FS lands analyzed for this EIS, or other lands within the West Antelope II LBA BLM study area and general analysis area. The nearest documented lek is approximately three miles away in T40N R70W, SE NW Section 29. The nearest known evidence of sage-grouse presence in the last 15 years was approximately 1.5 miles southwest of those USDA-FS lands. Consequently, anticipated mining-related disturbances will not affect any sage-grouse leks nor any identified and actively used seasonal sage-grouse habitats on or near USDA-FS lands analyzed for this EIS.

10. Bald eagle (*Haliaeetus leucocephalus*)

Bald eagles occur throughout North America, from Alaska and Canada south to Florida, the Gulf Coast, and northern Mexico. The northwest coast of North America serves as the stronghold for this species, with approximately one-half of the population inhabiting Alaska.

The USFWS officially listed the bald eagle as an endangered species in 43 of the lower 48 states on July 4, 1976. The listing was due to a combination of several factors, including widespread habitat loss, negative effects of pesticide use on reproductive success, indiscriminant shooting, and others. The status of the bald eagle was downgraded to threatened throughout the lower 48 states in 1995. Bald eagle population trends began increasing throughout most of the species' range in the early 1990's, and it was proposed for de-listing in 1999.

On July 9, 2007, the Service published a Federal Register notice (72 FR 37346) announcing that the bald eagle (*Haliaeetus leucocephalus*) would be removed from the list of threatened and endangered species under the Endangered Species Act of 1973, as amended (16 U.S.C 1531 *et seq.*) on August 8, 2007. However, the protections provided to the bald eagle under the Bald and Golden Eagle Protection Act (BGEPA), 16 U.S.C. 668, and the Migratory Bird Treaty Act (MBTA), 16 U.S.C. 703, will remain in place. The bald eagle is now recognized as a BLM and USDA-FS Sensitive Species.

Bald eagles typically nest in large trees within a stand of mature, similarly sized trees either along or in proximity (within 0.7 mile) to rivers, lakes, or reservoirs that harbor adequate fish populations. Those areas tend to be remote and experience little disturbance (Johnsgard 1990). Typically, the nest is placed in the crown of a large cottonwood or pine, but if the topography allows, eagles will nest on cliff edges or escarpments. Open-canopied trees and snags provide required perches in nesting and foraging areas.

All verified bald eagle nests in northeastern Wyoming (BLM Buffalo Field Office GIS database) are situated in significant, mature cottonwood stands along larger creeks or rivers (i.e., Tongue River, Powder River, Clear Creek, and Little Thunder Creek). Nesting attempts are rare on the Thunder Basin National Grassland (Beske 1994, USDA-FS). Fish and waterfowl are the primary source of food for nesting bald eagles. Where available, large to mid-size carrion and large rodents (e.g., prairie dogs [*Cynomys* spp.]) can also be an important dietary component.

Bald eagles nest and winter throughout Wyoming, though typically are not locally abundant in the northeastern portion of the state. The species regularly migrates through and winters in Campbell County (Cerovski et al. 2004), and has often been documented during winter and early spring at nearby coal mines (Thunderbird-Jones and Stokes data, currently on file with the USFWS and WDEQ/LQD). Most eagles that migrate through or winter in Campbell County roost communally in stands of large ponderosa pine, along wooded cottonwood-riparian corridors, or in isolated stands of large trees. As water is scarce in that region, especially during winter, those birds likely forage widely for lagomorphs or carrion.

Existing Conditions

Bald eagles are relatively common winter residents and migrants in the Powder River Basin, but only rarely nest in that region. The study area (including the one mile perimeter) includes only limited potential habitat for nesting or roosting activities in the form of a sparse riparian corridor along Antelope Creek and isolated trees or small (five trees or less) stands of cottonwoods along Antelope or Spring Creeks or their primary tributary draws. Those areas are already within the current approved permit area for the adjacent Antelope Mine, or are farther upstream and on the far side of a busy state highway from the study area. The corridor along Antelope Creek is within the buffer zone of non-disturbance, thus the trees along that drainage will not be physically disturbed.

In general, the study does not contain unique or sizeable, concentrated prey sources (e.g., fisheries, waterfowl wintering areas) that would be expected to attract bald eagles. Four black-tailed prairie dog (*Cynomys ludovicianus*) colonies lie within the LBA study area boundary: three occupied and one unoccupied colony which total 188 acres. Twelve additional colonies are present within two miles of the study area: 4 occupied, 7 unoccupied, and one unknown which total 541 acres. Sheep and lambs are present in the spring, when bald eagles have typically left the region, with winter flocks pastured there infrequently. The area does not support a large big game herd, though some groups do winter in the area.

Fixed-wing surveys for bald eagle winter roost sites were most recently completed in the study area during winter 2005-2006, with additional aerial and ground surveys in 2003. The latter surveys were conducted as part of the

West Antelope baseline studies. The western portion of the LBA study area (including portions of both main creeks) was also included incidentally in surveys for another project during 2004, 2005, and winter 2006-2007.

Potential winter roost surveys have encompassed all or most potential habitat within the LBA study area annually from 2003 through early 2007. All winter roost surveys were conducted between one-half hour before and one hour after sunrise or between one hour before and one-half hour after sunset, per current BLM guidelines for survey timing and frequency. Biologists also watched for nesting bald eagles within the survey area while conducting surveys for other nesting raptors. No bald eagles, nests, roosts, or any other sign were observed during the 2006 survey flights. Survey flights previously completed in the study area also never recorded bald eagle roosts, nests, or potentially prime habitat. The only regular occurrence of bald eagles in the area was observed during early 2007, when a single adult was recorded perched in a lone cottonwood in a dry gulch north of Spring Creek and on the west (far) side of Wyoming Highway 59, approximately 1.5 miles west of the LBA study area boundary.

Direct and Indirect Effects

Direct effects include the potential for injury or mortality to individual bald eagles foraging in the mine area. The increased human presence and noise associated with construction activities, if conducted while eagles are wintering within the area, could harass or displace individual eagles during that period. As large groups of eagles have not been documented in the general analysis area, impacts of the Proposed Action and Alternatives 1 and 2 would be limited to occasional foraging individuals rather than a large segment of the population. If necessary, the majority of direct effects could be mitigated if construction activities were conducted outside the winter and early spring months.

Indirect effects include additional disturbance and fragmentation of already limited winter foraging habitat within the geographic area. Indirect impacts could result from a variety of mining related operations including, but not limited to, topsoil stripping, overburden and coal removal, reclamation activities, reservoir and access road construction, increased noise and human presence, etc. Potential winter foraging habitat could be further fragmented by linear disturbances such as power lines (above ground and buried), fences, and pipelines. The latter disturbances would occur within narrow corridors over relatively short distances. The locations of operations would shift throughout the expanded permit area as mining occurred, with habitats disturbed and reclaimed incrementally. Conversely, the addition of fences and raptor-safe power poles could possibly benefit foraging bald eagles by providing additional perch sites. Due to the lack of potential nesting or roosting sites, and lack of concentrated sources of prey, both the direct and indirect effects of the Proposed Action and Alternatives 1 and 2 to bald eagles are expected to be minimal.

Cumulative short- and long-term habitat disturbance arises from multiple sources. These include direct and indirect impacts of mining within the permit expansion (with an anticipated life of 10-20 years), extraction of conventional oil and gas and coal bed natural gas (CBNG) reserves, grazing (livestock and wildlife), drought, and limited hunting. These activities have occurred in the past and most are expected to continue into the future at similar levels. Coal mining and CBNG development are expected to occur at an increased rate in the future due to the increasing energy needs of the country. However, given the documented lack of bald eagle use of, and habitats within, the LBA general analysis area and surrounding one-mile perimeter, mining the West Antelope II general analysis area is not expected to contribute measureably to cumulative effects.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives **may impact individuals but is not likely to cause a trend to federal listing or loss of viability** within the planning area. With bald eagle nests and winter roost sites absent in the study area, potential hazards for this species would be limited to foraging individuals during winter.

Disturbance, fragmentation, and alteration of potential foraging habitat will occur. Increased disturbance to individuals due to human activity may also occur.

The Antelope Mine has avoided, where possible, and mitigated raptor impacts in the past through intensive raptor monitoring, implementation of USFWS approved mitigation measures, and adjusting operations to provide temporal and spatial buffers around raptor nests. Mining activities and noise may disturb individuals inhabiting the lease area, thus inhibiting potential nesting or foraging in proximity to lands with ongoing development. Potential collisions with vehicles might also occur, though none have been recorded in the area to date.

11. Mountain Plover (*Charadrius montanus*)

The mountain plover breeds from southeastern Alberta and southwestern Saskatchewan through central Montana, south to south-central Wyoming, east-central Colorado and northeastern New Mexico, and east to northern Texas and western Kansas. In Wyoming, this species is a common summer resident (Cеровski et al. 2004). Mountain plovers require flat grasslands with short and sparse vegetation, and a large bare ground component (Knopf 1996) for nesting, foraging, or staging. Within the Powder River Basin, heavily grazed prairie dog colonies generally provide the most suitable mountain plover habitat.

Mountain plovers are monogamous and possibly polyandrous ground nesters, and typically produce at least two clutches. The nest is a shallow depression occasionally thinly lined with grass. Plovers may utilize the same nesting area

in subsequent years (Dechant et al. 2003d). Adults and fledged chicks leave the breeding grounds by early August, and may stage within appropriate habitats before migrating. Plovers feed primarily upon insects. Beetles, grasshoppers, crickets, and ants are the most important prey items (Knopf 1996). This species is highly approachable and does not flee far. Mountain plover populations have historically declined and recent data suggests that this species is continuing to decline in numbers. Causes of population declines have been primarily attributed to regional changes in agricultural practices (Knopf 1996).

Existing Conditions

Mountain plovers are summer residents within portions of the TBNG. Most observations of mountain plovers in northeast Wyoming have been associated with prairie dog colonies. Approximately 86 percent of recently (since 1993) occupied mountain plover habitat in that region occurred within prairie dog colonies (Byer 2001).

The history of this species at the Antelope Mine and surrounding area is well documented. Mountain plovers were first documented in the vicinity of the Antelope Mine and general analysis area during baseline studies in 1978 and 1979. Annual monitoring for this species began in 1982 and continued through 2006. Those surveys included much of the overall West Antelope II general analysis area, and the entire USDA-FS block and adjacent lands. Survey results have demonstrated that mountain plovers are regular spring migrants and/or summer residents in both areas.

Mountain plovers have undergone two intensive studies, as well as more than two decades of annual monitoring. Generally, two to five pairs of mountain plovers nest in the vicinity of the Antelope Mine each year. Over time, the number of observed broods in that area has fluctuated considerably, but young have fledged in 24 of the last 25 years. Generally more than 75 percent of mountain plover sightings recorded in the Antelope Mine monitoring area each year between 1994 and 2006 occurred within or adjacent to occupied black-tailed prairie dog colonies. The most regular sightings of mountain plovers in that region over the last 13 years have occurred in two occupied prairie dog colonies within the West Antelope II LBA tract general analysis area (T. 40 N., R. 71 W., Sections 8/9 and 15) and one remnant occupied colony in the Antelope permit area in T. 40 N., R. 71 W., Section 3 (Figure H-1). Since 1994, most of the documented nesting activity in the area has also occurred among those three prairie dog colonies. Further details regarding mountain plovers beyond the USDA-FS lands are provided in Chapter 3.

As previously described in the prairie dog subsection above, the eastern half of the Section 15 prairie dog colony encompasses approximately 41 acres of USDA-FS lands, while the entire colony (93 acres) is within the West Antelope II general analysis area. That prairie dog colony is associated with Mountain Plover Use Area (MPA) Numbers 3 (211 acres) and 4 (202 acres). The MPA

designation describes areas that were originally mapped as known or potential habitat in 1989, but that may or may not have been used by mountain plovers during previous or subsequent years. In addition to the prairie dog colony itself, USDA-FS lands overlap the northern portion of MPA Number 2 (225 acres).

Mountain plover use of USDA-FS lands within the West Antelope II general analysis area has also been well documented over the last 25 years. This species was observed in one or more of the three MPAs that overlap the USDA-FS or adjacent lands. As for the TBNG in general, most plovers were documented in the Section 15 black-tailed prairie dog colony that overlaps USDA-FS lands. Nesting efforts during that period were confirmed in ten years, with most broods also observed in that colony. Natural factors such as weather conditions appear to be the primary influences affecting annual brood production in the area. Unfavorable weather conditions such as drought, temperature extremes, and excessive precipitation that occur in the spring or summer months can result in declines in nesting attempts and the number of young observed.

Direct and Indirect Effects

The Proposed Action and Alternatives could potentially eliminate approximately 331 acres of habitat currently known or mapped as mountain plover use areas on or within one-quarter mile of USDA-FS lands within the West Antelope II LBA tract: 93 acres (28 percent) in the Section 15 prairie dog colony and 238 acres (72 percent) spread across portions of MPA Numbers 2-4 (Figure H-1). However, the greatest potential impact would occur in the prairie dog colony, as most observations and known mountain plover nesting have occurred in that portion of the area over time. Even sightings within that colony have been concentrated in its western half over time, beyond the USDA-FS lands themselves. Nevertheless, nests, adults, or young chicks present in those areas could be injured or killed if mining operations encroach during the nesting or early brood-rearing periods.

Both USDA-FS Standards and Guidelines and the Antelope Mine state mining permit stipulate that clearance surveys will be conducted and approved by the appropriate agencies before any colony is disturbed during the breeding season. That process will preclude most direct impacts to nesting mountain plovers on or immediately adjacent to USDA-FS lands within the BLM study area and West Antelope II general analysis area. The most probable source of potential effects would be an increase in the mortality of, or injury to, individuals foraging within or passing through the mine area due to collisions with mine-related equipment and vehicles. The use of existing roads in the area, when possible, would help minimize this risk. Increased activity and noise, especially during the nest initiation period, could inhibit nesting within proximity to mining activities.

Once active mining begins, a number of prairie dogs may escape their burrows

prior to the advance of encroaching machinery, and may even create new burrows in freshly turned soils associated with disturbance and reclamation activities. Approximately 73 percent of MPA Number 2 falls outside of the general analysis area for the West Antelope II LBA tract itself, and thus represents suitable habitat not slated for physical disturbance during any phase of this potential leasing action. The extreme southwestern extent of MPA Number 3 also will not be disturbed by activities associated with that leasing action. In addition to these areas immediately adjacent to federal USDA-FS lands, ample suitable nesting and foraging habitat for mountain plovers has been documented throughout the general area to the north, west, and south. However, the effects of increased CBNG activity to the northwest on mountain plover presence and use in that area are not yet known.

Given the species' willingness to return to areas disturbed by mining (as well as CBNG operation areas to the northwest), the long-term stability of the number of breeding pairs in the overall area, and the quantity of suitable but unoccupied habitat in the area, operations associated with the Antelope Mine have not adversely impacted mountain plovers. It appears that natural events and other unknown factors, particularly on wintering grounds, may be the primary forces affecting mountain plover numbers and use at and near the mine.

USDA-FS Standards and Guidelines for mountain plovers outlined in the TBNG Plan (USDA-FS 2002) would be implemented to minimize mine-related impacts to this species. To help maintain suitable nesting habitat for mountain plover, development of new facilities would be prohibited within 0.25 mile of known mountain plover nests or nesting areas. This would not apply to pipelines, fences and underground utilities. To reduce the risk of disturbances to nesting mountain plovers, surface use (e.g., drilling, testing, new construction, and workovers) would be prohibited from 15 March through 31 July within 0.25 mile of active nests. To help reduce risks to mountain plovers from traffic, vehicle speeds would be limited in occupied mountain plover habitat to 25 mph on resource roads and 35 mph on local roads. The USDA-FS may impose mitigation measures beyond the TBNG Plan Standards and Guidelines for mountain plovers on a project-by-project basis. These mitigation measures include intensive nest monitoring in areas of ongoing and continuous activities and contact with the appropriate agencies.

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 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, and to develop a USFWS approved species-specific monitoring and mitigation plan for mountain plovers. Those efforts include annual surveys, halting or delaying operations to accommodate nesting birds, planting of appropriate seed mixes in reclamation to restore habitats lost to mining, and re-creation of prairie dog colonies, the most commonly used habitat in the area. Through a successful translocation program implemented in 2002 and 2003, the mine has established a small, but growing, 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 to determine habitat conditions and to watch for mountain plover use.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives **may impact individuals but is not likely to cause a trend to federal listing or loss of viability** within the planning area. Degradation, destruction, and/or fragmentation of known and potential nesting, staging, and foraging habitat and potential collisions with vehicles and mining equipment may occur. Approximately 70% of this species' most commonly used habitat (prairie dog colonies) within the two-mile perimeter wildlife survey area for the Antelope Mine, as well as many square miles of additional known and potential habitat, lie beyond the general analysis area boundary for the West Antelope II LBA tract, including USDA-FS lands. Approximately 215 acres (30% of total) of prairie dog colonies are within the general analysis area for the West Antelope II LBA tract, and are thus likely to be disturbed at some point in time, should this leasing action move forward; about 41 acres (6%) within one colony occur on USDA-FS lands, with the entire colony (93 acres, 13%) falling within the general analysis area. Although the areas that lie beyond the West Antelope II LBA tract general analysis area boundaries are, or may be, impacted by non-mine related operations, expanding surveys have demonstrated more mountain plovers in the general area than were previously known.

12. Loggerhead shrike (*Lanius ludovicianus*)

Loggerhead shrikes breed from Washington, northern Alberta, central Saskatchewan, and southern Manitoba, south to California and Florida, and east to southwestern Minnesota, southern Wisconsin, southern Michigan, and Maryland. This species is a common summer resident throughout Wyoming (Cerovski et al. 2004). Shrikes prefer relatively open, heterogeneous habitats characterized by grasses and forbs of low stature interspersed with bare

ground and shrubs or low trees with perches for hunting. This species will use a wide variety of trees and shrubs, particularly thick or thorny species, as nesting substrates and hunting perches (Prescott and Bjorge 1999).

Although some shrike nests are used in subsequent years, fidelity to a nest site is limited. This species forages over relatively open habitats, feeding primarily upon arthropods, amphibians, small to medium-sized reptiles, small mammals, and birds (Yosef 1996). Shrikes may also feed upon road kill and carrion. This species is generally tolerant of human activity near a nest, although they will abandon if disturbed during egg-laying or early in incubation. The loggerhead shrike is declining in both number and overall range. Declines have been attributed to habitat loss and conversion, urbanization, pesticide contamination, and loss of insect prey as a result of pesticide use (Yosef 1996).

Existing Conditions

Loggerhead shrikes are common summer residents within the TBNG, though they are not often observed on or adjacent to USDA-FS lands. Shrikes have occasionally been seen in the one-mile perimeter wildlife survey area for the adjacent Antelope Mine (which includes all USDA-FS lands) over time. No actual shrike nests have been documented in that area, but the presence of recently fledged young in some years indicates that this species does nest in the general vicinity. Over time, most sightings occurred in the cottonwood-riparian corridor along Antelope Creek in T. 40 N., R. 71 W., W $\frac{1}{2}$ Section 5, approximately 2.5 miles north of the USDA-FS general analysis area. Shrikes have also been infrequently recorded perched on various fences or on overhead power lines in SE $\frac{1}{4}$ SE $\frac{1}{4}$ Section 16, just beyond the USDA-FS area. Shrike foraging habitat is present throughout the general analysis area, including USDA-FS lands. As indicated, existing utility and fence lines currently provide good quality hunting perches.

Direct and Indirect Effects

Implementation of the Proposed Action or Alternatives could result in direct and indirect impacts to loggerhead shrikes, though such impacts would likely be uncommon. No known nest sites have been documented on or adjacent to USDA-FS lands or elsewhere in the annual monitoring survey area for the adjacent Antelope Mine. The riparian corridor within the 100-foot buffer on either side of Antelope Creek (potential nesting habitat) will be protected from physical disturbance, as required by the Antelope Mine state mining permit. The most probable direct impact would be the mortality of, or injury to, individuals foraging within or passing through the USDA-FS lands due to collisions with mine-related vehicles, or dispersal of foraging individuals due to active mining.

The relatively slow movement of mining equipment and the noise associated with the activity would decrease direct impacts associated with vehicle collisions. As loggerhead shrikes are not especially common in the West Antelope II general analysis area, indirect impacts would be limited despite the

fragmentation, degradation, or loss of habitat in the short and mid-term, and the notable reductions in prey populations that would accompany active mining.

Any birds that would be displaced would be forced to travel to other locations with acceptable habitat. This could result in stress to individual birds, as well as potential decreased nesting effort and success. Prey numbers reduced by mining would be expected to rebound following reclamation due to generally high reproductive potential and prey tendencies to re-establish and adapt to disturbed and reclaimed areas.

The locations of mine-related habitat disturbances and reclamation efforts would proceed incrementally throughout the expanded mining area as operations progressed. Additionally, this mining activity would not conflict with the current TBNG Plan, or any future objectives to manage the TBNG for this species. USDA-FS Standards and Guidelines would offer additional protections for any active nest sites that may be present in the area.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives **may impact individuals but is not likely to cause a trend to federal listing or loss of viability** within the planning area. Such impacts would be minimized by the low frequency of regular sightings and known nesting attempts, as well as the relative paucity of suitable nesting habitat on or adjacent to the USDA-FS lands analyzed in this EIS and their surrounding region. Degradation, fragmentation, or loss of potential foraging habitat, reduction in prey populations, and potential collisions with vehicles may occur. Given the low number of birds recorded in the area, and the composition of the shrike's prey base (insects, small mammals, etc.), impacts to shrikes would be minimal. USDA-FS Standards and Guidelines would apply for active nests during the breeding season. Additionally, mining the USDA-FS lands would not conflict with the current TBNG Plan, or any future objectives to manage the TBNG for loggerhead shrikes.

13. Brewer's Sparrow (*Spizella breweri*)

The breeding range of the Brewer's sparrow extends from southwestern Yukon, southern Alberta, southwestern Saskatchewan, south (east of the Cascades and Sierras) to southern California, central Arizona, and northern New Mexico (Rotenberry et al. 1999). The Brewer's sparrow is a common summer resident of the basin-prairie and mountain-foothills throughout Wyoming (Cerovski et al. 2004). Brewer's sparrow is a sagebrush obligate species and where present is the most abundant species (Rotenberry et al. 1999).

This species is an uncommon cowbird (*Molothrus ater*) host and typically builds a small cup nest low in sagebrush shrubs. Brewer's sparrows prefer to nest in medium-sized (19-35 in) live sagebrush within relatively dense (26-42% canopy cover) stands (Walker 2004). Grass height and density are important factors

for nest concealment. Although tolerant of human visitation, this species may abandon a nest if disturbed during the construction process.

Brewer's sparrows feed primarily on small insects and, to a lesser extent, seeds from grasses and forbs. Throughout areas where they have been surveyed, the species appears to have undergone and continues to undergo statistically significant declines (Rotenberry et al. 1999). Major threats to Brewer's sparrow populations are similar to those faced by other declining sagebrush-obligate species and include habitat conversion and fragmentation, invasion by non-native plants, altered fire regimes, livestock overgrazing, conifer encroachment, energy development, and conversion to urban or residential housing (Walker 2004).

Existing Conditions

Brewer's sparrows are common summer residents within the TBNG and northern Converse County (Cerovski et al. 2004). Breeding bird survey data from annual monitoring and baseline studies conducted for the Antelope Mine, and incidental observations over time, have shown that the Brewer's sparrow is a common but limited breeder in the area. This species has been recorded in the vicinity of the mine during each of the last 13 years (1994-2006). However, Brewer's sparrows were most often seen in a relatively small stand of big sagebrush, their preferred habitat (Rotenberry et al. 1999), in the southeastern corner of the northern half of the West Antelope II LBA general analysis area just north of the county line in T. 41 N., R. 71 W., NW $\frac{1}{4}$ Section 27 and NE $\frac{1}{4}$ Section 28. Although nests have rarely been encountered, the presence and behavior (singing) of birds throughout spring and summer suggest that Brewer's sparrows regularly nest in that area. Brewer's sparrows were not documented during breeding bird surveys (which included USDA-FS lands) in 2006 due to elimination of the sagebrush stand described above as a result of landowner access restrictions.

The known Brewer's sparrow habitat in Sections 27 and 28 is approximately 3.75 miles northwest of the USDA-FS lands. No Brewer's sparrows have been recorded in that area over the last 25 years of annual monitoring, including breeding bird point counts conducted on those USDA-FS lands in 2006. As described for sage-grouse, above, the lack of a continuous stand of quality sagebrush in that area is a limiting factor for sage-obligates such as Brewer's sparrows.

Direct and Indirect Effects

Nesting and foraging habitat for Brewer's sparrow is present in limited stands of sagebrush on and near USDA-FS lands within the BLM study area. The shrubs in that area are relatively short and somewhat sparse, and represent only marginal habitat for sage obligates such as this sparrow. Potential direct impacts to this species include the destruction of active nests during topsoil removal or other operations, mortalities resulting from collision with large equipment and other vehicles, natural predators, and displacement of

individuals from their core home range. As for other species, such impacts could be minimized by incremental disturbance and reclamation of disturbed areas.

The use of existing roads, when possible, could minimize additional impacts related to traffic hazards and use of new travel corridors by mammalian predators. Increased activity and noise, especially during the nest initiation period, could inhibit nesting proximate to mining activities. Foraging could also be hindered within these areas, especially where active mining occurs. Additional infrastructure and activity associated with the expansion of the mine, in combination with other ongoing disturbances (e.g., CBNG operations), could displace Brewer's sparrows from any historical use areas that might occur in the area. Those birds could potentially move into other sagebrush stands in the general area, assuming they are not already occupied.

Limited habitat loss, degradation, and fragmentation will result from a variety of large- and small-scale mining operations (e.g., topsoil stripping, drilling, reservoir construction, etc.) on USDA-FS lands. In addition to their effects on the landscape, linear habitat disturbances (i.e., roads and power lines) can also provide convenient travel corridors for mammalian predators, thus increasing the predation risk to individuals in proximity to these structures.

Given that Brewer's sparrows have not been documented on or near the USDS-FS lands analyzed in this EIS, and the marginal quality of the sage stands present in that area, potential impacts to this species would be minimal. Reclamation of disturbed areas will occur incrementally as mining is completed in a given portion of the mine and will eventually mitigate impacts to some degree, though such efforts could take decades to benefit sagebrush obligates such as the Brewer's sparrow. Impacts to sagebrush habitat on USDA-FS lands could be further mitigated off-site by efforts to preserve and enhance such habitat on adjacent and nearby private lands. Landowners in the region have formed an ecosystem-based land management group (Thunder Basin Grasslands Prairie Ecosystem Association) that has been working cooperatively with the USDA-FS Douglas Ranger District and USFWS to implement a research and management plan for sage-grouse on their private lands that could also address the needs of other sagebrush obligates, including the Brewer's sparrow, within the TBNG. Standards and Guidelines for sagebrush habitats outlined in the TBNG Plan (USDA-FS 2002, pages 1-18; Appendix D) would be implemented as necessary, and could serve to sustain regional populations of this sparrow.

Determination of Effect and Rationale

Implementation of the Proposed Action or Alternatives **may impact individuals but is not likely to cause a trend to federal listing or loss of viability** within the planning area.

Given the limited presence and marginal quality of sagebrush within the USDA-FS general analysis area, and the likelihood that Brewer's sparrows would remain viable elsewhere within the TBNG for at least the short-term, the Proposed Action or Alternatives would not conflict with the current TBNG Plan (USDA-FS 2002) or future objectives to manage the area for this species. Application of appropriate USDA-FS Standards and Guidelines, successful reclamation efforts, and proper land management on adjoining lands could mitigate potential impacts, to some degree.

CUMULATIVE EFFECTS REGARDING SENSITIVE SPECIES

Cumulative effects are defined under the NEPA process as the incremental impacts of past, present, and reasonably foreseeable future actions conducted by any entity (federal, state, private, and others).

Cumulative short- and long-term disturbances to the species considered in this analysis arise from multiple sources that occur on federal and non-federal lands within the general analysis area for the West Antelope II LBA tract, including USDA-FS lands within that area and neighboring lands. Those sources include direct and indirect impacts of mining (with an anticipated life of at least 20 more years), extraction of conventional oil and gas and CBNG reserves, road development and relocation, construction and removal of power lines and pipelines, grazing (livestock and wildlife), drought, occupied residences, and hunting and trapping. Those activities have occurred in the vicinity of the USDA-FS general analysis area in the past and most are expected to continue at similar levels, at least for the near future.

Coal mining and CBNG development are expected to occur at an increased rate in the future. Other reasonable and foreseeable developments within the area could potentially include the construction of a coal-fired power plant and new rail lines for transporting coal. Both mining and oil and gas development activities have requirements for reclamation of disturbed areas as resources are depleted. However, those standards are dramatically different in both implementation and monitoring. As new areas of disturbance related to energy extraction activities are added, areas that have been mined out will be restored and reclaimed. Similarly, oil and gas well sites will be reclaimed once they are depleted and abandoned.

No critical habitat for any USDA-FS Sensitive Species has been delineated in the West Antelope II LBA tract general analysis area (including the USDA-FS lands). Any habitat losses that do occur will eventually be mitigated for most species by reclamation with native seed mixes which may improve habitat quality by reducing the presence of non-native plants (e.g., crested wheatgrass) within the area. Leasing lands within the West Antelope II general analysis area will not conflict with the current TBNG Plan, or any future objectives to manage USDA-FS lands and provide habitat for Sensitive Species. Because effects of disturbance on sensitive species inhabiting the same habitat types

would be the same, cumulative impacts are analyzed according to species' main habitat associations.

Species Associated Primarily With Short Grasses or Prairie Dog Colonies

Five evaluated species are strongly associated with prairie dog colonies or other areas with short, sparse vegetation: the black-tailed prairie dog, mountain plover, burrowing owl, chestnut-collared longspur, and McCown's longspur. Cumulative impacts to these habitats and associated species will largely result from activities that would decrease occupied black tailed prairie dog colonies within the area. As the prairie dog is the most common sensitive species in the area, it has the most potential to be affected by cumulative impacts from the Proposed Action and Alternatives. Specifically, individuals could be killed or injured by activities in or near prairie dog colonies, and habitat will be lost until reclamation takes place. Incremental habitat disturbance and freshly turned soil in stripped and reclaimed areas would allow escaping or dispersing animals to create new burrows, and thus maintain a presence in the area.

Burrowing owls and mountain plovers rely heavily on prairie dogs to provide and maintain suitable nesting habitat. Longspurs are also often found in prairie dog colonies in the overall general analysis area. Therefore, any activities that jeopardize prairie dogs will also affect those species to some degree. Although impacts would occur on approximately 215 acres of prairie dog colonies within or overlapping the boundaries of the West Antelope II LBA general analysis area (93 acres of which occur on or within one-quarter-mile of USDA-FS lands), the presence of approximately 514 acres of colonies beyond the overall general analysis area would minimize negative impacts to those three species. Despite their strong association with prairie dogs, species such as burrowing owls, mountain plovers, and longspurs can all utilize short-grass habitats other than prairie dog colonies. However, all of those avian species would benefit from the presence of undisturbed prairie dog colonies surrounding the West Antelope II LBA tract general analysis area, including USDA-FS lands, as well as other short-form vegetative communities.

Despite the presence of additional habitat outside the area, cumulative effects expected for these five species would include habitat destruction, alteration, and fragmentation. As indicated, some individuals may be killed or injured by vehicles or equipment, collisions with fences, and poisoning or shooting. Predation rates on some species may increase due to the creation of favorable habitats, perches, or travel corridors for avian or mammalian predators. Nests of avian species will likely be destroyed or compromised by human disturbances or activities, and individuals (especially avian species) will likely be displaced from existing territories. Such occurrences would increase competition for available adjacent territories. If those areas have already reached carrying capacity, the result would be intra-specific competition followed by nutritional stress, decreased fecundity, and/or mortality.

Mixed Sagebrush and/or Mid-grass Species

Mid-grass parcels interspersed with sagebrush occur, but are not especially common in the West Antelope II LBA tract general analysis study area, including USDA-FS lands. Mining the area will impact the habitats that are present. Evaluated species for mixed grassland habitats included the swift fox, long-billed curlew, and ferruginous hawk. Cumulative impacts to those species would be the similar to those described above. However, as all of these species have the capacity of utilizing a variety of habitats, including prairie dog colonies and short-grass areas, beyond the overall general analysis, the cumulative effects would be somewhat lessened.

Regarding the swift fox and ferruginous hawk, the fragmentation, alteration, or destruction of suitable habitats would also destroy denning and shelter sites or nest sites, respectively, and would potentially facilitate inter-specific competition for available prey bases. Both the swift fox and hawks using these habitats would also be negatively affected by activities that reduce prey availability. The impacts would be partially mitigated by the existing presence of alternate denning and nesting sites in the area that would not be disturbed by the Proposed Action or Alternatives. The greatest threat to mixed, mid-grass species would arise from the creation of habitat patches that are too small to attract individuals or sustain viable breeding pairs or populations.

Sagebrush Obligates

Species associated with sagebrush habitats that could occur in or near the West Antelope II LBA tract general analysis area and USDA-FS lands include the Greater sage-grouse and Brewer's sparrow. However, more than 25 years of annual monitoring have demonstrated that the sagebrush stands within those areas and surrounding lands are insufficient in size and structure to support sage-grouse. Therefore, sage-grouse would not experience cumulative impacts due to mining within either the overall or USDA-FS general analysis area. Similarly, the relatively small and somewhat sparse shrub stands within the northern portion of the West Antelope II LBA tract general analysis area provide limited, marginal habitat for Brewer's sparrows, and observations have been sparse in the area over time. No Brewer's sparrows have been recorded on or near the USDA-FS lands during more than two decades of frequent spring and summer surveys.

Given the restricted occurrence of sagebrush habitat within the overall general analysis area (including USDA-FS lands) and immediate vicinity, cumulative impacts to sagebrush habitats and their associated species would be minimal. Impacts that do occur would likely be limited to the direct injury or mortality of individual Brewer's sparrows, or their nests or young. Indirect impacts to Brewer's sparrows could entail changes in their presence or distribution as the quantity and quality of existing sagebrush stands in the area are diminished

due to habitat fragmentation, alteration, degradation, and conversion of shrubland communities during ongoing and new mining operations.

Any displaced individuals would have to compete for the limited availability of adjacent territories, and if those areas have reached carrying capacity, intra-specific competition may result in nutritional stress, decrease in fecundity, or mortality to affected individuals. Sagebrush habitats lost to mining would be mitigated, as required. However, those efforts would not likely be able to keep pace with, or compensate for, the on-going loss or alteration of sagebrush habitat within the area, as sagebrush stands can take two or three decades to re-establish.

Tree or Wetland/Aquatic Species

Only one small (less than five) stand of trees and no wetland/aquatic habitats occur on and near USDA-FS lands, and such habitats are limited elsewhere in the overall West Antelope II LBA tract general analysis area. Species associated with treed or aquatic habitats that could occur in or near those areas include the loggerhead shrike and northern leopard frog, though the latter is less likely to be present. Cumulative effects to shrikes would be similar, but slightly greater than, those for non-raptor avian species within mixed mid-grass and shrub habitats. The increased intensity of effects would be due to the overall lack of trees (potential nest sites) within either general analysis area, and thus the limited alternate habitats as trees are lost to mining. Mitigating that impact is the fact that most trees in the general analysis area are within the 100-foot buffer zone along Antelope Creek, and thus will not be physically disturbed by future mining. However, that location is approximately 2.75 miles north of the USDA-FS lands. High intensity activity and noise along that corridor when mining is most proximate could deter shrikes from nesting in the area, at least until they acclimated to the disturbance. All trees destroyed by mining will be replaced during reclamation, but it will take decades for them to mature to their current stature.

Northern leopard frogs are not prevalent within either the West Antelope II LBA tract general analysis area or USDA-FS lands, and therefore have little potential to be affected by cumulative impacts from the Proposed Action and Alternatives. Wetland and aquatic habitats for northern leopard frogs are considered very poor to unsuitable on USDA-FS lands within the West Antelope II LBA tract general analysis area and no frog sightings have been recorded on USDA-FS lands within the general analysis area. If this species is present in the future, individuals could be killed or injured by activities in proximity to aquatic habitats. Dewatering or degradation of breeding habitats could kill eggs, tadpoles, or over-wintering adults, as well as increase predation rates on adults and eggs. Conversely, the creation and augmentation of aquatic habitats for sedimentation ponds and other purposes could maintain and possibly increase local northern leopard frog populations.

Overall, despite the death, injury, and displacement of some animals, the cumulative impacts associated with the Proposed Action and Alternatives are not expected to significantly reduce the size or viability of populations of any of the USDA-FS Region 2 Sensitive Species. Many of these species have not been documented within either the West Antelope II LBA or USDA-FS general analysis area over the last 25 years, have already been displaced from those areas, or have remained present despite the ongoing mine and non-mine activities in and near those areas.

TBNG PLAN COMPLIANCE

The Proposed Action and Alternatives are considered to be in compliance with Grassland-wide, Geographic Area, and Management Area Standards and Guidelines for wildlife (including regionally sensitive species, and Management Indicator Species) detailed in the Grassland Plan (USDA-FS 2002).

REQUIRED MITIGATION AND RECOMMENDED MONITORING

To help protect R2 Sensitive Species, the operator will notify the USDA-FS District Ranger, Douglas, Wyoming, if sensitive species nests or dens in addition to those identified in the Biological Evaluation are located during construction or operation of the project. Future surveys for any R2 Sensitive Species could be conducted in response to requests from the USDA-FS Douglas District Ranger. This would allow assessments of how, and if, implementation of the TBNG Plan is benefiting these species.

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

- Using raptor-safe power lines;
- Designing fences to permit wildlife passage;
- Creating artificial raptor nest sites;
- Relocating raptor nests and taking other action to maintain active nesting pairs;
- Restoring pre-mining topography to the maximum extent possible;
- Planting a diverse mixture of grasses, forbs, and shrubs in configurations beneficial to wildlife; and
- Building and maintaining sediment control ponds or other sediment control devices during mining.

To further minimize negative impacts to faunal species of concern, the USFWS requires additional species-specific protective measures, as well as targeted monitoring and mitigation plans for certain Region 2 Sensitive Species.

USDA-FS MANAGEMENT INDICATOR SPECIES

SPECIES EVALUATED AND RATIONALE

A Management Indicator Species (MIS) is defined as a “plant or animal species or habitat components selected in a planning process used to monitor the effects of planned management activities on populations of wildlife and fish, including those that are socially or economically important” (USDA-FS 2002). MIS are selected to serve as barometers for species diversity and viability. These species are monitored over time to assess the effects of management activities on their populations and habitat, and the populations of other species with similar habitat needs. MIS for the TBNG are identified by Geographic Area. In accordance with the TBNG Plan (USDA-FS 2002), the Greater sage-grouse was selected as the management indicator species to be evaluated for this project (as defined for the Hilight Bill Geographic area).

For detailed sage-grouse habitat and population information, please see Section 3.10.5 in the EIS. This Biological Assessment and Biological Evaluation (BABE) document analyzes and discloses potential effects to wildlife if lands within the West Antelope II general analysis area are leased and mined. The USDA-FS Douglas Ranger District biologists have reviewed the EIS and BA/BE.

In addition to the information provided in this EIS analysis, USDA-FS also completed an evaluation of the Greater sage-grouse as a USDA-FS MIS. The complete MIS evaluation is available for public review at the USDA-FS Douglas Ranger District. The following is a brief summary of the findings of Forest Service’s MIS evaluation in regard to the Proposed Action and Alternatives 1 and 2:

- “According to WGFD records and USDA-FS records, the closest sage-grouse leks are approximately three miles away from the West Antelope II proposed lease area. Given the limited sightings of sage-grouse observations in the area, and the minimal quantity and marginal quality of potential sage-grouse habitat, implementation of the Proposed Action or either Alternative 1 or 2 is not likely to negatively impact any existing or potential sage-grouse leks, and will not impact prevalent sage-grouse habitats (expanses of sagebrush).”
- “. . . (The Proposed Action and Alternatives 1 and 2) are not expected to change the current trend of sage grouse habitat on Thunder Basin National Grassland.”
- “. . . (The Proposed Action and Alternatives 1 and 2) would be in compliance with the TBNG LRMP management direction for sage grouse as an MIS. At this time, the viability of sage grouse within Thunder Basin National Grassland is not a concern.”

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