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## EXECUTIVE SUMMARY

On April 6, 2005, ACC<sup>1</sup> filed an application with the BLM for a maintenance tract of federal coal adjacent to ACC's Antelope Mine in Campbell and Converse Counties, Wyoming (Figures ES-1 and ES-2). The application, which was assigned case file number WYW163340, is referred to as the West Antelope II LBA coal lease application. As currently applied for, the West Antelope II LBA tract includes approximately 4,109 acres and ACC estimates that it includes 465.1 million tons of in-place federal coal. The lands applied for in this application are located approximately 20 miles southeast of the town of Wright, Wyoming.

This lease application was reviewed by the Division of Mineral and Lands at the BLM Wyoming State Office, who determined that the application and the lands involved met the requirements of the regulations governing coal leasing on application at 43 CFR 3425.1. The PRRCT reviewed this lease application at a public meeting held on April 27, 2005 in Gillette, Wyoming. The PRRCT recommended that the BLM process the West Antelope II lease application.

In order to process an LBA, the BLM must evaluate the quantity, quality, maximum economic recovery, and fair market value of the federal coal and fulfill the requirements of the NEPA by evaluating the environmental consequences of leasing the federal coal.

To evaluate the environmental impacts of leasing and mining the coal, the BLM must prepare an EA or an EIS to evaluate the site-specific and cumulative environmental and socioeconomic impacts of leasing and developing the federal coal in the application area. The BLM made a decision to prepare an EIS for this lease application. BLM does not authorize mining by issuing a lease for federal coal, but the impacts of mining the coal are considered in this EIS because it is a logical consequence of issuing a maintenance lease to an existing mine.

The EPA will publish a notice announcing the availability of the Draft EIS in the *Federal Register*. A 60-day comment period on the Draft EIS will commence with publication of the EPA's notice of availability. The BLM will publish a Notice of Availability/Notice of Public Hearing in the *Federal Register*. The BLM's *Federal Register* notice will announce the date and time of a public hearing to be held during the 60-day comment period. The purpose of the public hearing will be to solicit public comments on the Draft EIS and on the fair market value, the maximum economic recovery, and the proposed competitive sale of federal coal from the LBA tract. The BLM will also publish a notice of public hearing in the Gillette News-Record and in the Douglas Budget newspapers. All substantive written comments received on the DEIS will be included, with agency responses, in the FEIS.

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<sup>1</sup> Refer to page xv for a list of abbreviations and acronyms used in this document.

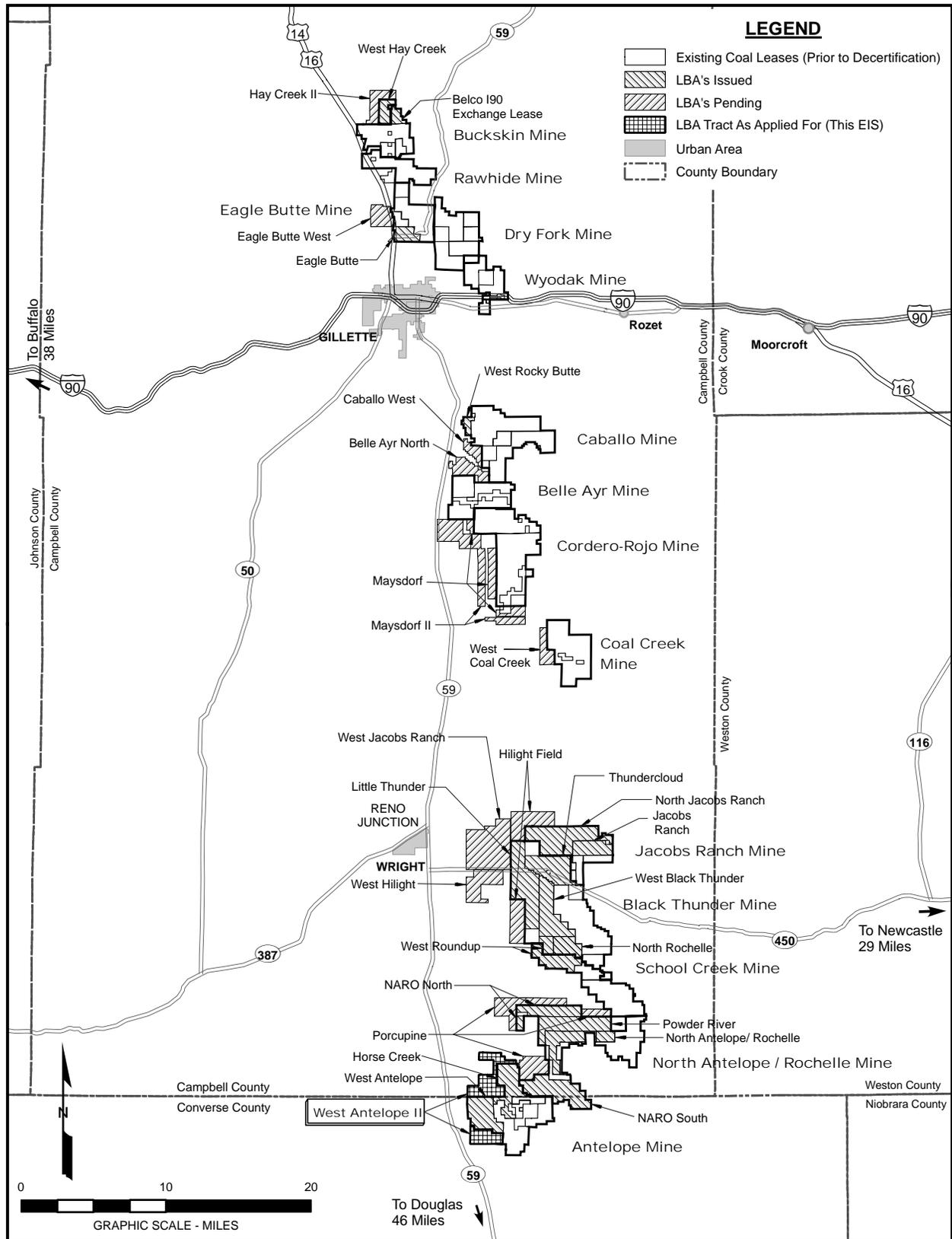


Figure ES-1. General Location Map with Federal Coal Leases and LBA Tracts.

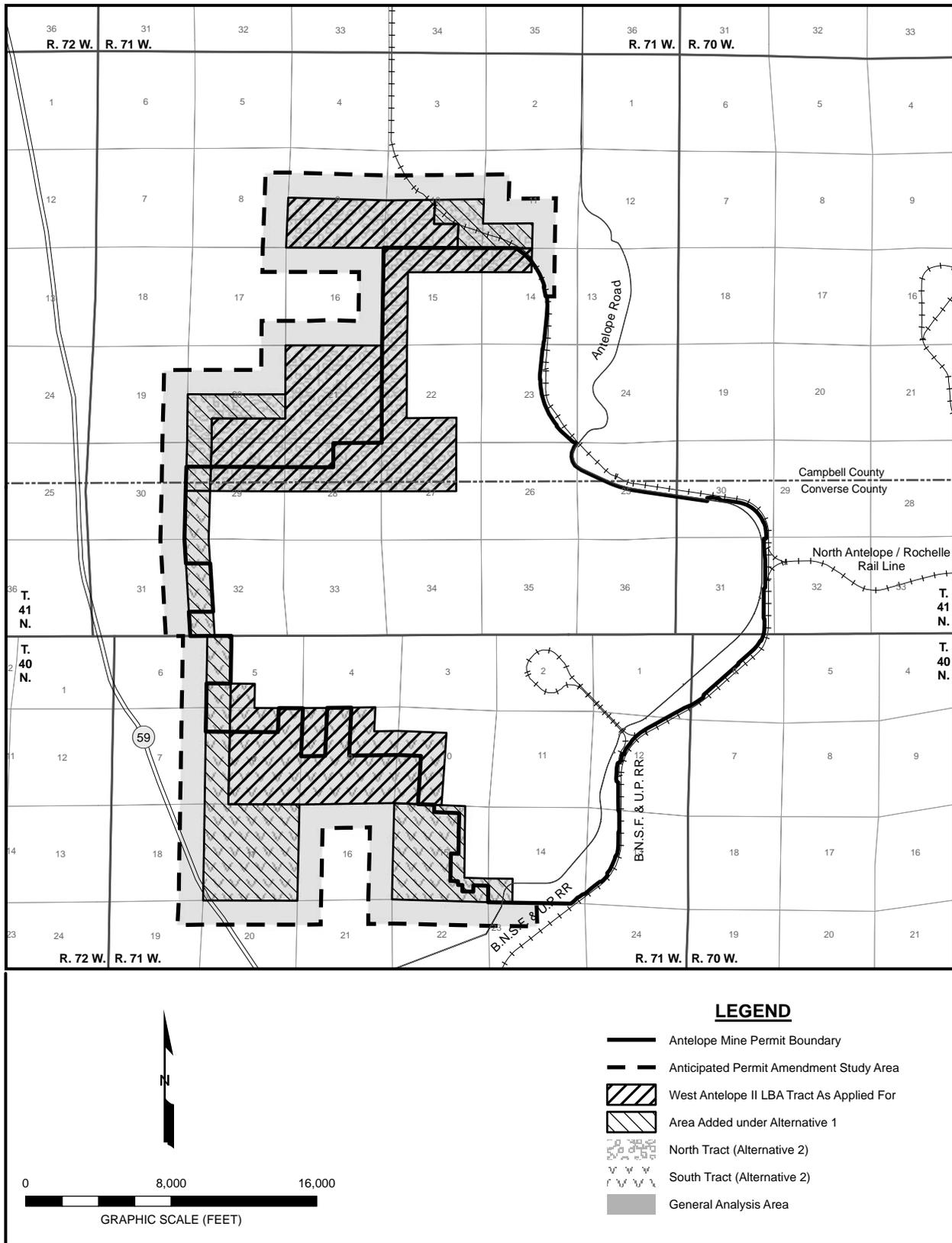


Figure ES-2. General Analysis Area.

BLM will use the analysis in this EIS to decide whether to hold a competitive, sealed-bid lease sale for the tract as applied for, hold a competitive, sealed-bid lease sale for a modified tract, or reject the lease application and not offer the tract for sale at this time. A Record of Decision will be issued and, if the decision is to offer the tract for lease, then a sale will be held. If a sale is held, the bidding at the sale would be open to any qualified bidder. If a lease sale is held for this LBA tract, the applicant (ACC) may not be the successful high bidder. If the lease sale is held, a federal coal lease would be issued to the highest bidder at the sale if a federal sale panel determined that the high bid meets or exceeds the fair market value of the coal as determined by BLM's economic evaluation, and if the U.S. Department of Justice determines that there are no antitrust violations if a lease is issued to the high bidder.

Cooperating agencies in the preparation of this EIS include USDA-FS, OSM, WDEQ/AQD, WDEQ/LQD, and the Converse County Board of Commissioners. Other agencies, including OSM, will also use this analysis to make decisions related to leasing and mining the federal coal in this tract.

A decision to lease the federal coal lands in this application would be in conformance with the BLM Resource Management Plan for the Buffalo and Casper Field Offices and with the TBNG Land and Resource Management Plan. The West Antelope II LBA tract is contiguous with the Antelope Mine. The analysis in this EIS assumes that ACC would be the successful bidder on the West Antelope II LBA tract if a sale were held, and that it would be mined as a maintenance tract for the Antelope Mine.

A Proposed Action and three alternatives to that action are analyzed in detail in this DEIS.

- **Proposed Action** - The Proposed Action is to hold a competitive coal lease sale and issue a maintenance lease to the successful bidder for the West Antelope II LBA tract as applied for (Figure ES-2). Under the Proposed Action, ACC currently estimates that average annual production would be between 36 and 42 million tons per year and the life of the existing mine would be extended by 10 to 12 years. The Antelope Mine presently has a workforce of 430 employees, and as many as 25 to 40 additional workers may be needed at times during the life-of-mine.
- **Alternative 1** - Under Alternative 1, BLM would hold a competitive lease sale and issue a maintenance lease for a tract that is larger than the applied-for configuration. BLM has identified 2,200.6 acres that are adjacent to the tract as applied for that could be added in order to maximize economic recovery and avoid bypassing potentially recoverable federal coal (Figure ES-2). If all of these lands are added to the tract, this alternative would add about 65 million tons of unleased federal coal to the West Antelope II LBA tract as applied for. Under this alternative,

production and average employment would be similar to the Proposed Action.

- **Alternative 2** - This alternative considers dividing the tract as applied for into two tracts and offering one or both of those tracts for sale. A separate, competitive sealed-bid sale would be held for each tract that is offered for sale (Figure ES-2). This alternative also includes the 2,200.6 identified under Alternative 1 that BLM is considering adding to the tract. Production and employment would be similar to the Proposed Action.
- **Alternative 3** - Under this alternative, the LBA tract would not be leased, but the existing leases at the adjacent Antelope Mine would be developed according to the existing approved mining plans. Under the No Action Alternative, the Antelope Mine would mine its remaining leased coal reserves in approximately 9 to 11 years at an average annual production rate of 36 to 42 million tons per year and average employment would be approximately 430 persons. Rejection of the lease application would not preclude an application to lease the tract in the future.

Surface ownership within the West Antelope II LBA tract as applied for under the Proposed Action and the lands added under Alternatives 1 and 2 consists primarily of private lands. A small tract of federal land is administered by USDA-FS.

Tables ES-1 and ES-2 summarize coal production, surface disturbance, mine life, and revenues for the Proposed Action and Alternatives 1, 2, and 3 for the West Antelope II LBA tract for a base-case production rate of 36 mmtpy and for the currently permitted production rate of 42 mmtpy. The environmental impacts of mining the LBA tract would be similar under the Proposed Action and Alternatives 1 and 2.

Other alternatives that were considered but not analyzed in detail include holding a competitive coal lease sale and issuing a lease to the successful bidder (not the applicant) for the purpose of developing a new stand-alone mine, and delaying the sale of the West Antelope II LBA tract as applied for to increase the benefit to the public afforded by higher coal prices and/or to allow more complete recovery of the potential CBNG resources in the tract prior to mining.

Critical elements of the human environment (BLM 1988) that could potentially be affected by the Proposed Action or Alternatives 1 and 2 include air quality, cultural resources, Native American religious concerns, T&E species, hazardous or solid wastes, water quality, wetlands/riparian zones, invasive non-native species, and environmental justice. Five other critical elements (areas of critical environmental concern, prime or unique farmlands, wild and scenic rivers, floodplains, and wilderness) are not present in the general

Executive Summary

Table ES-1. Summary Comparison of Coal Production, Surface Disturbance, Mine Life, and Revenues for West Antelope II LBA Tract and Antelope Mine - Assuming Average Annual Post-2006 Coal Production is 36 mmt.

<i>Item</i>	<b>Alternative 3-No Action Alternative (Existing Antelope Mine)</b>	<b>Added by Proposed Action (tract as applied for)</b>	<b>Added by Alternative 1</b>	<b>Added by Alternative 2 (North Tract)</b>	<b>Added by Alternative 2 (South Tract)</b>
In-Place Coal (as of 1/1/07)	428.6 mmt	465.1 mmt	530.0 mmt	442.7 mmt	87.3 mmt
Mineable Coal (as of 1/1/07) <sup>1</sup>	428.6 mmt	463.7 mmt	490.0 mmt	403.2 mmt	86.8 mmt
Recoverable Coal (as of 1/1/07) <sup>2</sup>	394.3 mmt	429.5 mmt	453.9 mmt	374.6 mmt	79.3 mmt
Coal Mined Through 2006	318.9 mmt	—	—	—	—
Potential Lease Area <sup>3</sup>	11,635.5 ac	4,108.6 ac	6,309.2 ac	3,248.5 ac	3,060.7 ac
Total Area To Be Disturbed <sup>4</sup>	12,104.8 ac	4,314.0 ac	6,624.7 ac	3,410.9 ac	3,213.7 ac
Permit Area <sup>4</sup>	14,280.1 ac	4,490.2 ac	7,405.3 ac	3,616.4 ac	3,870.2 ac
Average Annual Post-2006 Coal Production	36 mmt	0 mmt	0 mmt	0 mmt	0 mmt
Remaining Life of Mine (post-2006)	11 yr	12 yr	13 yr	10 yr	2 yr
Average Number of Employees	430	up to 25	up to 25	up to 25	up to 25
Total Projected State and Local Revenues (post-2006) <sup>5,6</sup>	\$ 657.3 million	\$ 780.4 - \$ 924.3 million	\$ 824.7 - \$ 976.8 million	\$ 680.6 - \$ 806.1 million	\$ 144.1 - \$ 170.6 million
Total Projected Federal Revenues (post-2006) <sup>7</sup>	\$ 473.7 million	\$ 580.5 - \$ 724.3 million	\$ 613.4 - \$ 765.5 million	\$ 506.3 - \$ 631.7 million	\$ 107.2 - \$ 133.7 million

<sup>1</sup> Mineable coal figure excludes all coal that would not be mined beneath BNSF & UP railroad ROW and public road ROWs.

<sup>2</sup> Recoverable coal figure assumes 91.3 percent recovery (south tract, two seams) or 92.9 percent recovery (north tract, one seam) of mineable coal and excludes all mining losses that occur during normal mining operations.

<sup>3</sup> Includes federal and state coal leases

<sup>4</sup> The disturbed area exceeds the leased area because of the need for highwall reduction, topsoil removal, and other mine support activities outside the lease boundaries. The permit area is larger than the leased or disturbed area to assure that all disturbed lands are within the permit boundary and to allow an easily defined legal land description. Permit areas for the Alternative 2 North and South Tracts overlap; the sum of these areas is therefore greater than the Alternative 1 permit area.

<sup>5</sup> Revenues to the State of Wyoming and local governments include severance tax, property and production taxes, sales and use taxes, and Wyoming's share of federal royalty payments, bonus bids, and AML fees. State revenues are based on an assumed price of \$9.01 per ton of 'recoverable coal', federal royalty of 12.5 percent of the value less 50.5 percent federal share, plus \$0.315 per ton for AML fees x an assumed 25 percent state share, plus bonus payments of between \$0.30 and \$0.97 per ton of LBA leased coal per ton (based on average of last 6 LBAs in 2004 and 2005) x tonnage of recoverable coal x 50 percent state share, plus \$0.07 per ton estimated sales and use taxes, plus \$0.33 per ton estimate for ad valorem taxes, plus \$0.415 per ton in severance taxes. Only the sales and use taxes paid directly by the mine are considered, i.e., those generated by vendors and suppliers and by consumer expenditure supported directly and indirectly by the mine are not included.

<sup>6</sup> Revenues for Alternative 3 do not include the \$43.9 million in scheduled coal lease bonus bids to be paid on the West Antelope LBA in FY07 through FY09.

<sup>7</sup> Federal revenues are based on an assumed price of \$9.01 per ton, federal royalty of 12.5 percent x 50.5 percent share, plus \$0.315 per ton for AML fees x an assumed 75 percent federal share, plus black lung tax of \$0.00261 per ton, plus bonus payments of between \$0.30 and \$0.97 per ton of LBA leased coal of (based on the range of the 6 most recent last 6 LBA sales in 2004 and 2005) x tonnage of recoverable coal minus x 50 percent federal share.

Table ES-2. Summary Comparison of Coal Production, Surface Disturbance, Mine Life, and Revenues for West Antelope II LBA Tract and Antelope Mine - Assuming Average Annual Post-2006 Coal Production is 42 mmt.

<i>Item</i>	<b>Alternative 3-No Action Alternative (Existing Antelope Mine)</b>	<b>Added by Proposed Action (tract as applied for)</b>	<b>Added by Alternative 1</b>	<b>Added by Alternative 2 (North Tract)</b>	<b>Added by Alternative 2 (South Tract)</b>
In-Place Coal (as of 1/1/07)	428.6 mmt	465.1 mmt	530.0 mmt	442.7 mmt	87.3 mmt
Mineable Coal (as of 1/1/07) <sup>1</sup>	428.6 mmt	463.7 mmt	490.0 mmt	403.2 mmt	86.8 mmt
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Coal Mined Through 2006	318.9 mmt	—	—	—	—
Potential Lease Area <sup>3</sup>	11,635.5 ac	4,108.6 ac	6,309.2 ac	3,248.5 ac	3,060.7 ac
Total Area To Be Disturbed <sup>4</sup>	12,104.8 ac	4,314.0 ac	6,624.7 ac	3,410.9 ac	3,213.7 ac
Permit Area <sup>4</sup>	14,280.1 ac	4,490.2 ac	7,405.3 ac	3,616.4 ac	3,870.2 ac
Average Annual Post-2006 Coal Production	36 mmt	6 mmt	6 mmt	6 mmt	0 mmt
Remaining Life of Mine (post-2006)	11 yrs	10 yr	11 yr	9 yr	2 yr
Average Number of Employees	430	up to 40	up to 40		up to 40
Total Projected State and Local Revenues (post-2006) <sup>5,6</sup>	\$ 657.3 million	\$ 780.4 - \$ 924.3 million	\$ 824.7 - \$ 976.8 million	\$ 680.6 - \$ 806.1 million	\$ 144.1 - \$ 170.6 million
Total Projected Federal Revenues (post-2006) <sup>7</sup>	\$ 473.7 million	\$ 580.5 - \$ 724.3 million	\$ 613.4 - \$ 765.5 million	\$ 506.3 - \$ 631.7 million	\$ 107.2 - \$ 133.7 million

<sup>1</sup> Mineable coal figure excludes all coal that would not be mined beneath BNSF & UP railroad ROW and public road ROWs.

<sup>2</sup> Recoverable coal figure assumes 91.3 percent recovery (south tract, two seams) or 92.9 percent recovery (north tract, one seam) of mineable coal and excludes all mining losses that occur during normal mining operations.

<sup>3</sup> Includes federal and state coal leases

<sup>4</sup> The disturbed area exceeds the leased area because of the need for highwall reduction, topsoil removal, and other mine support activities outside the lease boundaries. The permit area is larger than the leased or disturbed area to assure that all disturbed lands are within the permit boundary and to allow an easily defined legal land description. Permit areas for the Alternative 2 North and South Tracts overlap; the sum of these areas is therefore greater than the Alternative 1 permit area.

<sup>5</sup> Revenues to the State of Wyoming and local governments include severance tax, property and production taxes, sales and use taxes, and Wyoming's share of federal royalty payments, bonus bids, and AML fees. State revenues are based on an assumed price of \$9.01 per ton of 'recoverable coal', federal royalty of 12.5 percent of the value less 50.5 percent federal share, plus \$0.315 per ton for AML fees x an assumed 25 percent state share, plus bonus payments of between \$0.30 and \$0.97 per ton of LBA leased coal per ton (based on average of last 6 LBAs in 2004 and 2005) x tonnage of recoverable coal x 50 percent state share, plus \$0.07 per ton estimated sales and use taxes, plus \$0.33 per ton estimate for ad valorem taxes, plus \$0.415 per ton in severance taxes. Only the sales and use taxes paid directly by the mine are considered, i.e., those generated by vendors and suppliers and by consumer expenditure supported directly and indirectly by the mine are not included.

<sup>6</sup> Revenues for Alternative 3 do not include the \$43.9 million in scheduled coal lease bonus bids to be paid on the West Antelope LBA in FY07 through FY09.

<sup>7</sup> Federal revenues are based on an assumed price of \$9.01 per ton, federal royalty of 12.5 percent x 50.5 percent share, plus \$0.315 per ton for AML fees x an assumed 75 percent federal share, plus black lung tax of \$0.00261 per ton, plus bonus payments of between \$0.30 and \$0.97 per ton of LBA leased coal of (based on the range of the 6 most recent last 6 LBA sales in 2004 and 2005) x tonnage of recoverable coal minus x 50 percent federal share.

analysis area and are not addressed further. In addition to the critical elements that are potentially present in the general analysis area, this EIS discusses the status and potential effects of mining the LBA tract on topography and physiography, geology and mineral resources, soils, water quantity, alluvial valley floors, vegetation, wildlife, land use and recreation, paleontological resources, visual resources, noise, transportation resources, and socioeconomics.

The project area is located in the PRB, a part of the Northern Great Plains that includes most of northeastern Wyoming. The West Antelope II LBA tract is located in the eastern part of the PRB, in an area consisting primarily of a dissected rolling upland plain with low relief, broken by steeply cut washes. Elevations range from about 4,500 ft to 5,100 ft above sea level and slopes range from flat to around 34 percent and average about five percent. There are four mineable coal seams at the Antelope Mine and within the West Antelope II LBA tract. Locally, these seams are referred to as the Anderson, Lower Anderson, Canyon/Upper Canyon, and Lower Canyon. These seams are part of what is more widely known as the Wyodak-Anderson coal zone of the Tongue River Member of the Fort Union Formation. Mining would remove an average of 280 ft of overburden and 60 ft of coal on about 4,109 acres under the Proposed Action. Mining would remove an average of 260 ft of overburden and 50 ft of coal on about 6,309 acres under Alternatives 1 and 2.

The existing topography on the LBA tract would be substantially changed during mining. A highwall with a vertical height equal to overburden plus coal thickness would exist in the active pits. Following reclamation, the average surface elevation would be lower due to removal of the coal. The reclaimed land surface would approximate premining contours and the basic drainage network would be retained; however, the reclaimed surface would contain fewer and gentler topographic features. This could contribute to reduced habitat diversity and wildlife carrying capacity on the LBA tract. These topographic changes would not conflict with regional land use, and the postmining topography would adequately support anticipated postmining land use.

The geology from the base of the coal to the land surface would be subject to considerable permanent change on the LBA tract under the Proposed Action or Alternatives 1 and 2. After removal of the coal, the replaced overburden would be a relatively homogeneous mixture compared to the premining layered overburden. Development of other minerals potentially present on the West Antelope II LBA tract could not occur during mining, but could occur after mining.

There are currently no producing conventional oil and gas wells on the West Antelope II LBA tract under the Proposed Action or Alternatives 1 and 2. Conventional oil and gas wells near the tract, if disturbed by mining, would have to be plugged and abandoned during mining but could be recompleted after mining if the remaining reserves justify the expense of the recompletion.

Forty CBNG wells have been completed in the Wyodak-Anderson coal zone in the sections that include the West Antelope II LBA tract under the Proposed Action and Action Alternatives. Thirty of these wells are capable of producing CBNG resources that are not recovered prior to mining would be vented to the atmosphere and irretrievably lost when the coal is removed. BLM's policy is to optimize recovery of both resources, ensure the public receives a reasonable return, and encourage agreements between lessees or use BLM authority to minimize loss of publicly owned resources.

No significant or unique paleontological resources have been recorded in the general analysis area.

Moderately adverse short-term impacts to air quality would be extended onto the West Antelope II LBA tract during the time it is mined if a lease is issued. Modeling for the current Antelope Mine permit predicted no exceedances of the annual PM<sub>10</sub> WAAQS at a 42 mmtpy production rate. One exceedance of the PM<sub>10</sub> WAAQS was recorded at one of the monitoring stations at the Antelope Mine, however, that exceedance was attributed by WDEQ/AQD to maintenance/construction operations on the adjacent railroad line and not to mining operations at the Antelope Mine. NO<sub>x</sub> modeling was also conducted in support of the most recent permit application, and impacts from the worst-case years fall well below the NAAQS. There have been no reported events of public exposure to NO<sub>2</sub> from blasting activities at the Antelope Mine through 2005. Figure ES-3 shows the maximum modeled PM<sub>10</sub> and NO<sub>x</sub> concentrations at the Antelope Mine for 2012. There have been no exceedances of the 24-hour or annual ambient air standards resulting from mining operations at the Antelope Mine through 2005 and none are expected from mining the LBA tract.

Public exposure to emissions from surface mining operation is most likely to occur along publicly accessible roads and highways that pass through the areas of mining operations. Occupants of dwellings in the area could also be affected. Roads, highways, occupied dwellings, businesses, and school bus stops in the vicinity of the Antelope Mine and the study area for the West Antelope II LBA tract are shown in Figure ES-4.

Mining would disturb the coal aquifer and the aquifers in the overburden above the coal within the West Antelope II LBA tract. The coal aquifer and any water-bearing strata in the overburden would be removed and replaced with unconsolidated backfill. The area of drawdown in the areally-continuous coal aquifer related to mining operations at the Antelope Mine would be expected to increase roughly in proportion to the increase in area affected by mining. Figure ES-5 shows the predicted extent of drawdown in the Anderson-Canyon coal seam over the life of the mine if the Antelope Mine acquires the West Antelope II LBA tract. The area of drawdown in the discontinuous overburden aquifers would be smaller. The data available indicate that, after reclamation, the hydraulic properties of the backfill would be comparable to the properties of the premining overburden and coal aquifers. TDS levels in groundwater from the backfill could initially be expected to be higher than in the premining

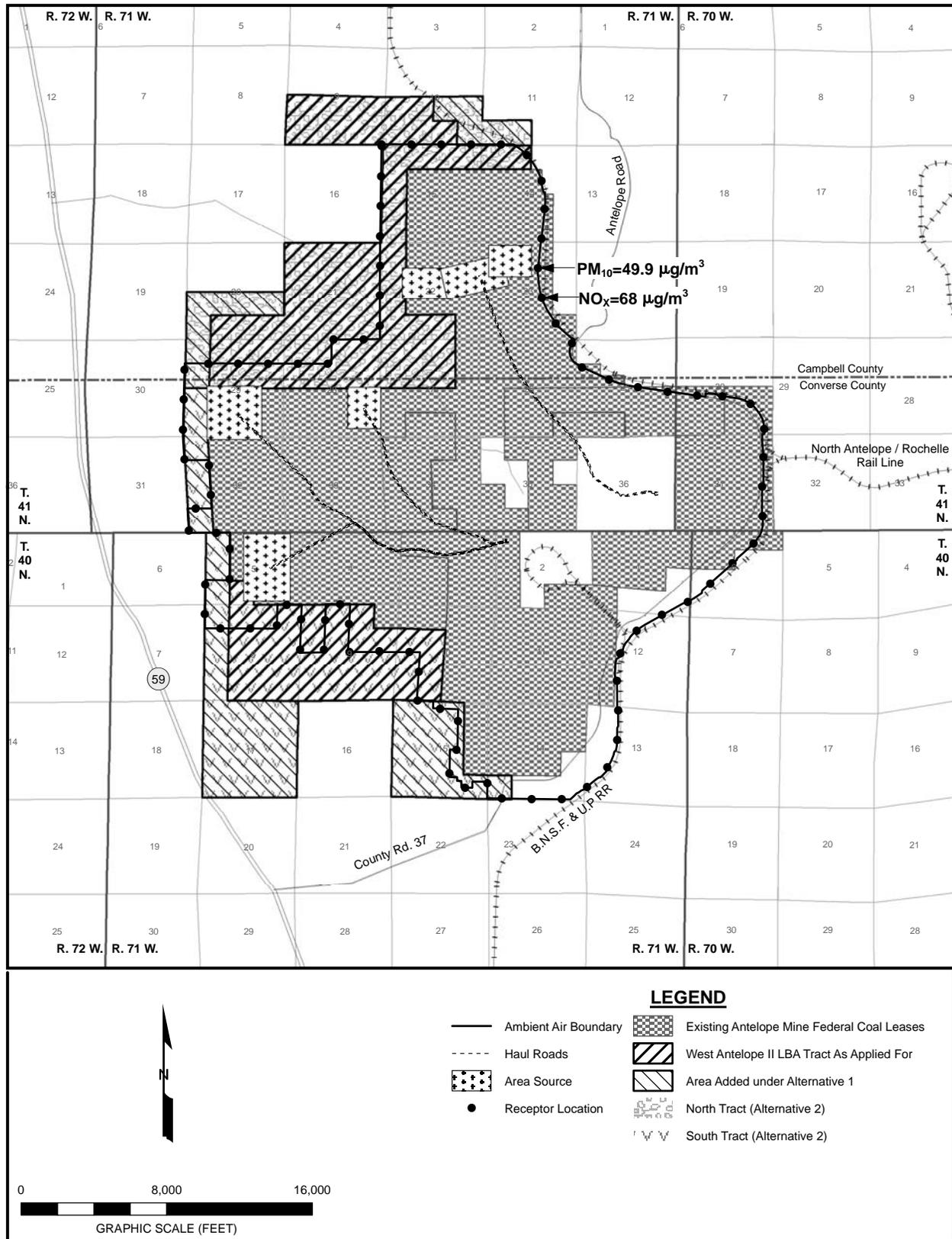


Figure ES-3. Maximum Modeled  $PM_{10}$  and  $NO_x$  Concentrations at the Antelope Mine Ambient Air Boundary for the Year 2012.

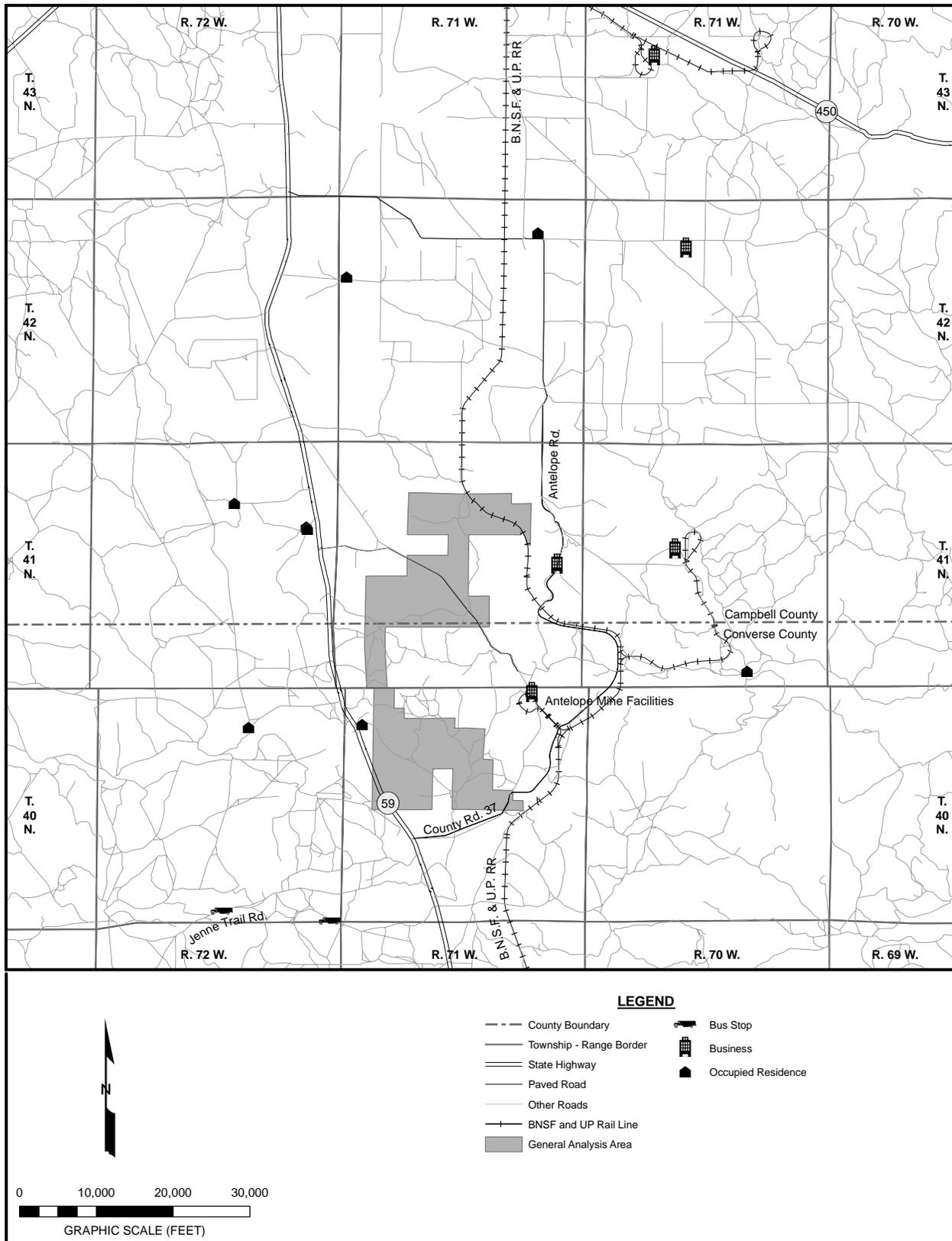


Figure ES-4. Roads, Highways, Occupied Dwellings, Businesses and School Bus Stops in the Vicinity of the Antelope Mine and the West Antelope II General Analysis Area.

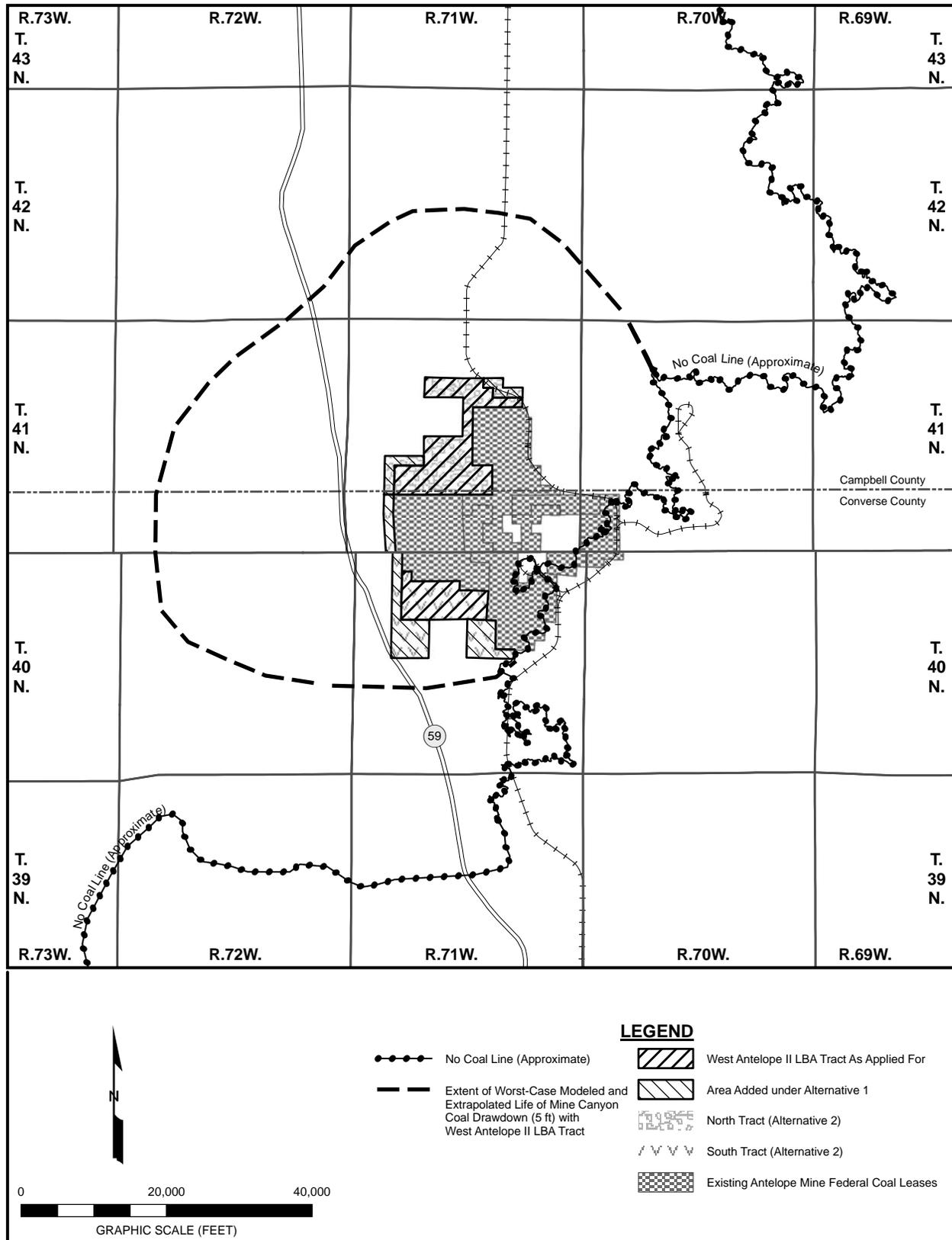


Figure ES-5. Life of Mine Drawdown Map, Resulting from Currently Approved Mining with Addition of the West Antelope II LBA Tract.

overburden and coal aquifers, but would be expected to meet Wyoming Class III standards for use as livestock water.

Mining would not directly disturb aquifers below the coal. ACC has two water supply wells completed in aquifers below the coal and these wells would be used to supply water for a longer period of time if the West Antelope II LBA tract is leased. Antelope Mine probably would not require additional sub-coal wells to mine the LBA tract.

Antelope Creek and its tributaries, most notably Horse Creek and Spring Creek, drain the existing Antelope Mine permit area and the West Antelope II LBA tract. Except for two crossings, Antelope Creek flows undisturbed from west to east across Antelope Mine's current permit area. Horse Creek is currently disturbed by mining in the Horse Creek Amendment Area of the Antelope Mine. Spring Creek has recently been diverted to accommodate mine's upcoming mining activities, and two other draws within the permit area are also slated for mine-related disturbance. Changes in runoff characteristics and sediment discharges would occur during mining of the LBA tract as a result of the destruction and reconstruction of drainage channels and the use of sediment control structures to manage discharges of surface water. In accordance with SMCRA and Wyoming State Statutes, the major channels would be restored after surface mining operations are completed on the West Antelope II LBA tract. Surface water flow, quality, and sediment discharge would approximate premining conditions.

The West Antelope II LBA tract has not yet been formally evaluated for the presence of AVFs. However, there are stream-laid deposits in portions of Horse Creek and Spring Creek within the general analysis area that are potential AVFs. A site-specific study will be part of the mine permitting process if a lease sale is held and the LBA tract is proposed for mining. Declarations of the presence or absence of AVFs, their significance to agriculture, and the appropriate perimeters will then be made by the WDEQ/LQD. It is reasonable to assume that if the WDEQ/LQD determines AVFs are present within the LBA tract that is leased, mining would be permitted because all of the proposed lease area consists entirely of undeveloped rangeland.

Wetland inventories have been completed on the West Antelope II general analysis area. Approximately 42.9 acres of wetlands and other waters of the U.S. have been identified. The majority of the wetlands are associated with the Antelope Creek, Horse Creek, and Spring Creek stream channels. The majority of the channel other waters of the U.S. are associated with the ephemeral stream channels present on the area. Existing wetlands located in the LBA tract would be destroyed by mining operations. Jurisdictional wetlands that are disturbed by mining must be replaced during the reclamation process.

Consequences to soil resources from mining the LBA tract would include changes in the physical, biological, and chemical properties. Following reclamation, the soils would be unlike premining soils in texture, structure,

color, accumulation of clays, organic matter, microbial populations, and chemical composition. The replaced topsoil would be more uniform in type, thickness, and texture. It would be adequate in quantity and quality to support planned postmining land uses (i.e., wildlife habitat and rangeland).

The predominant vegetation types, in terms of total acres of occurrence in the vegetation analysis area are the blue grama upland (41.65 percent) and blue grama roughland (20.36 percent), which occur primarily on the level uplands and adjacent breaks. Mining would progressively remove this native vegetation. Reclamation and revegetation of mined areas would occur contemporaneously with mining on adjacent lands. Reestablished vegetation would be dominated by species mandated in the reclamation seed mixtures, which are approved by the WDEQ/LQD. The majority of these species would be native to the LBA tract. Initially, the reclaimed land would be dominated by grassland vegetation, which would be less diverse than the premining vegetation. Estimates for the time it would take to restore sagebrush to premining density levels range from 20 to 100 years. An indirect long-term impact associated with this vegetative change would potentially be a decrease in available habitat for shrub dependent species. However, a diverse, productive, and permanent vegetative cover would be established on the LBA tract following reclamation and prior to release of the final reclamation bond. The decrease in plant diversity would not seriously affect the potential productivity of the reclaimed areas, and the proposed postmining land uses (wildlife habitat and rangeland) should be achieved even with the changes in vegetation composition and diversity. The reclamation plans for the LBA tract would also include steps to control invasion by weedy (invasive, nonnative) plant species.

Direct impacts of surface coal mining on wildlife occur during mining and are short term. They include road kills by mine-related traffic, direct losses of less mobile wildlife species, restrictions on wildlife movement created by fences, spoil piles and pits, displacement of wildlife from existing habitat in areas of active mining (including abandonment of nests or nesting and breeding habitat for birds), increased competition between animals in areas adjacent to mining operations, and increased noise, dust, and human presence. Habitat for aquatic species would also be lost during mining operations. Indirect impacts are longer term and include alterations in topography and vegetative cover following reclamation which may decrease wildlife carrying capacity and habitat diversity. The West Antelope II LBA tract does not include any unique or crucial big game habitat, and habitat disturbance would be incremental, with reclamation progressing as new disturbance occurs. In the long term, following reclamation, carrying capacity and habitat diversity may be reduced due to flatter topography, less diverse vegetative cover, and reduction in sagebrush density.

T&E plant and animal species that could be present on the tract include the Ute ladies'-tresses orchid and black-footed ferret. Areas of suitable habitat for the Ute ladies'-tresses orchid within the West Antelope II LBA tract and

adjacent study area were surveyed in August 2006 and in July and August 2007, and no individuals were located. The black-footed ferret is a nocturnally active mammal that depends almost entirely upon the prairie dog for its survival. The West Antelope II EIS study area and its perimeter harbor some small prairie dog colonies, but black-footed ferrets have never been documented at the mine or in the surrounding region during surveys conducted over the last 20 plus years by a variety of private, state, and federal entities. The lack of black-footed ferret observations or scat in the EIS study area leads to the conclusion that ferrets are not present in the area.

Active mining would preclude other land uses. Recreational and grazing use of the LBA tract would be severely limited during mining. Oil and gas development would be curtailed and CBNG that is not recovered prior to mining would be vented and irretrievably lost as the coal is removed. Access to approximately 240 acres of USDA-FS-administered federal surface included in the West Antelope II LBA tract under Alternatives 1 and 2 would be limited if that land is leased and mined. Approximately 100 of those acres are within the current Antelope Mine permit area and access to the public is currently limited on those lands as a result. Within 10 years after initiation of each reclamation phase, rangeland and wildlife use would return to near premining levels. The cumulative impacts of energy development (coal mining, oil and gas) in the PRB will continue to contribute to a reduction in hunting opportunities for some animals (pronghorn, mule deer, and sage-grouse).

The West Antelope II general analysis area, with the exception of one 40-acre lot, has been surveyed for cultural resources at the Class I and Class III level. A total of 61 cultural sites were identified. Seven prehistoric sites are considered eligible for the NRHP by the cultural site recorder. Until consultation with SHPO has occurred and agreement regarding NRHP eligibility has been reached, all sites would be protected from disturbance.

No sites of Native American religious or cultural importance have been identified on the LBA tract. If such sites or localities are identified at a later date, appropriate action must be taken to address concerns related to those sites.

Mining activities on the West Antelope II LBA tract would be visible from Wyoming Highway 59 and several county roads. Mining would affect landscapes classified by BLM as VRM Class IV, and the landscape character would not be significantly changed following reclamation. No unique visual resources have been identified on or near the LBA tract.

There are occupied dwellings and businesses in the vicinity of the West Antelope II LBA tract (Figure ES-4). The nearest occupied residence (the Don Jacobs residence) is approximately 2,800 feet west of the westernmost extent of the tract. If the tract is leased and mined, mining operations could be approximately 2,000 feet closer to this residence than the current lease would allow. Wildlife in the immediate vicinity of mining may be adversely affected;

however, anecdotal observations at surface coal mines in the area indicate that some wildlife may adapt to increased noise associated with coal mining activity. After mining and reclamation are completed, noise would return to premining levels.

Leasing the West Antelope II LBA tract would extend the length of time that coal is shipped from the permitted Antelope Mine, which would extend the length of time that coal transportation facilities would be required under the Proposed Action or Alternatives 1 or 2. State Highway 59 crosses the southwestern corner of the south block of the tract under Alternatives 1 and 2. County Road 37 crosses the southeastern corner of the south block of the tract under Alternatives 1 and 2. Lands within 100 feet of the outside line of the ROW of a public road are considered unsuitable for mining; however, they could be included in the West Antelope II LBA tract to allow recovery of economically mineable coal outside of the ROW and buffer zone. Active pipelines and utility/power transmission lines would have to be relocated in accordance with previous agreements, or agreements would have to be negotiated for their removal or relocation.

Royalty and bonus payments for the coal in the LBA tract would be collected by the federal government and split with the state. Assuming an average coal price of \$9.01 per ton recovered and a potential range of bonus payments of 30 to 97 cents per ton, the potential additional federal revenues would range from \$581 to \$766 million, depending on the alternative selected and the bonus price at the time the coal is leased. Potential revenue to the state would range from \$780 to \$977 million. Mine life, and thus employment, would be extended by up to 13 years at Antelope Mine.

With regard to Environmental Justice issues, economic and demographic data indicate that neither minority populations nor people living at or below the poverty level make up “meaningfully greater increment” of the total population in Gillette, Wright, Campbell County, Douglas or Converse County than they do in the state as a whole. Also, the Native American population is smaller than in the state as a whole and there are no known Native American sacred sites on or near the study area for the West Antelope II LBA tract.

Under the No Action Alternative, the coal lease application would be rejected and the area contained in the application would not be offered for lease at this time. The tract could be nominated for lease again in the future. Under the No Action Alternative, the impacts described in the preceding paragraphs to topography and physiology, geology and minerals, soils, air quality, water resources, AVFs, wetlands, vegetation, wildlife, T&E species, land use and recreation, cultural resources, Native American concerns, paleontological resources, visual resources, noise, transportation, and socioeconomics would occur on the existing Antelope Mine coal leases, but these impacts would not be extended onto the West Antelope II LBA tract. Portions of the LBA tract adjacent to the existing mine would be disturbed to recover the coal in the existing leases.

If impacts are identified during the leasing process that are not mitigated by existing required mitigation measures, BLM can include additional mitigation measures, in the form of stipulations on the new lease, within the limits of its regulatory authority. BLM has not identified additional special stipulations that should be added to the BLM lease or areas where additional or increased monitoring measures are recommended.

Cumulative impacts result from the incremental impacts of an action added to other past, present, and reasonably foreseeable future actions, regardless of who is responsible for such actions. Cumulative impacts can result from individually minor, but collectively significant, actions occurring over time.

Since decertification of the Powder River Federal Coal Region in 1990, 17 coal leases containing more than five billion tons of federal coal have been issued following competitive sealed-bid sales. Three exchanges of federal coal in the Wyoming portion of the Powder River Federal Coal Region have also been completed. Additional coal lease applications, including the West Antelope II application, are currently pending. The pending LBA applications contain approximately 4.9 billion tons of coal.

Currently, BLM is completing a regional technical study, called the PRB Coal Review, to help evaluate the cumulative impacts of coal and other mineral development in the PRB. The study evaluates current conditions as of a baseline year (2003) and projects development levels and potential associated cumulative impacts related to coal and coal-related development, oil and gas and oil- and gas-related development, and other development through 2020. Due to variables associated with future coal production, two projected coal production scenarios (representing an upper and a lower production level) were developed. The projected development levels are based on projected demand and coal market forecasts and include production at the Antelope Mine during the baseline year and projected production for the mine for 2010, 2015, and 2020.

The Wyoming portion of the PRB is the primary focus of the PRB Coal Review, but the Montana portion of the PRB is included in some studies. A series of reports has been prepared (some reports in the series are in preparation) to present the results of the PRB Coal Review studies. The results of the PRB Coal Review studies that have been completed are summarized in Section 4.0 of this EIS.

Cumulative impacts vary by resource, with potential impacts to air quality, groundwater quantity, wildlife habitat, and socioeconomics generally being the greatest concerns.

The PRB Coal Review air quality study documents the modeled air quality impact of existing operations during 2002 and of projected development activities in 2010. The model was used to evaluate impacts of existing and projected source emissions on several source groups, including near-field

receptors in Wyoming and Montana, receptors in nearby federally designated “Class I” areas, and receptors at “Class II” sensitive areas. The EPA guideline CALPUFF model system was used for the modeling analysis.

The existing regional air quality conditions are generally very good, but the modeling showed some substantial impacts at some receptors for 2002 and 2010. Table ES-3 presents the maximum modeled impacts on ambient air quality at the near-field receptors in Wyoming and Montana for 2002 and for the 2010 upper and lower coal development scenarios. Table ES-4 lists the projected modeled visibility impacts for 2002 for all analyzed Class I and sensitive Class II areas. For the upper and lower coal production scenarios, it shows the number of additional days that the projected impacts were greater than 1.0 dv (10 percent in extinction) for each site in 2010.

The PRB Coal Review groundwater and surface water studies are in progress, but a number of modeling analyses have previously been conducted to help predict the impacts of surface coal mining on groundwater resources in the PRB. In addition, each mine must monitor groundwater levels in the coal and underlying and overlying aquifers and assess the probable hydrologic consequences of mining as part of the mine permitting process. The monitoring programs track the extent of groundwater drawdown propagation to the west and the extent of recharge and quality of the water in the backfill areas of the mines. The monitoring data indicate that recharge is occurring in the backfill and that water from the backfill will generally be acceptable for premining uses, which is primarily livestock watering. Modeling and monitoring indicate that the groundwater drawdown impacts of coal mining and CBNG development are overlapping.

The PRB Coal Review studies include an evaluation of the impacts to wildlife and aquatic species as of 2003 and an evaluation of the projected levels of disturbance in the PRB in 2010, 2015, and 2020, based on the projected development levels in those years. Impacts to wildlife and fisheries can be classified as short-term and long-term. Short-term impacts are related to habitat disturbance during project development and operation. Long-term impacts result from changes in habitat after reclamation is completed. Habitat fragmentation can result from activities such as roads, well pads, mines, pipelines, and electrical power lines, as well as increased noise, elevated human presence, dispersal of noxious and invasive weed species, and dust from unpaved road traffic.

Table ES-3. Projected Maximum Potential Near-field Impacts ( $\mu\text{g}/\text{m}^3$ ).

Pollutant	Averaging Time	Base Year (2002) Impacts	2010 Lower Coal Production Scenario Impacts	2010 Upper Coal Production Scenario Impacts	NAAQS	Wyoming AAQS	Montana AAQS	PSD Class II Increments
<b>Wyoming Near-field</b>								
NO <sub>2</sub>	Annual	37.3	42.4	49.0	100	100	-- <sup>1</sup>	25
SO <sub>2</sub>	Annual	3.9	4.8	5.6	80	60	-- <sup>1</sup>	20
	24-hour	14.5	33.5	34.8	365	260	-- <sup>1</sup>	91
	3-hour	37.9	148.0	154.2	1,300	1300	-- <sup>1</sup>	512
PM <sub>10</sub>	Annual	42.7	49.0	<b>56.6</b>	-- <sup>2</sup>	50	-- <sup>1</sup>	17
	24-hour	<b>335.5</b>	<b>378.8</b>	<b>439.9</b>	150	150	-- <sup>1</sup>	30
<b>Montana Near-field</b>								
NO <sub>2</sub>	Annual	8.85	11.3	11.8	100	-- <sup>1</sup>	100	25
	1-hour	365.8	415.9	519.5	--	-- <sup>1</sup>	564	--
SO <sub>2</sub>	Annual	1.3	2.3	2.7	80	-- <sup>1</sup>	80	20
	24-hour	18.9	19.5	20.4	365	-- <sup>1</sup>	365	91
	3-hour	74.7	76.4	79.8	1,300	-- <sup>1</sup>	1,300	512
	1-hour	240.7	246.4	257.3	--	-- <sup>1</sup>	1,300	--
PM <sub>10</sub>	Annual	19.6	22.5	27.7	-- <sup>2</sup>	-- <sup>1</sup>	50	17
	24-hour	<b>175.8</b>	<b>200.0</b>	<b>247.7</b>	150	-- <sup>1</sup>	150	30

1 No standard or increment.

2 On September 21, 2006, the EPA announced final revisions to the NAAQS for particulate matter, which were published in the Federal Register on October 17, 2006 and took effect December 18, 2006. The revision not only strengthened the 24-hour PM<sub>2.5</sub> standard from 65 to 35  $\mu\text{g}/\text{m}^3$ , but also revoked the annual PM<sub>10</sub> standard of 50  $\mu\text{g}/\text{m}^3$ . Wyoming will enter into rulemaking to revise the Wyoming Ambient Air Quality Standards. Until that time, however, Wyoming will retain the 50  $\mu\text{g}/\text{m}^3$  annual PM<sub>10</sub> standard. See additional discussion in Chapter 3, Section 3.4.2.1.

**Bold values** indicate projected exceedances of AAQS.

Source: PRB Coal Review Task 3A Report (BLM 2006a)

Table ES-4. Modeled Change in Visibility Impacts at Class I and Sensitive Class II Areas.

Location	2002	2010 Lower Coal Production Scenario	2010 Upper Coal Production Scenario
	No. of Days >10%	Change in No. of Days > 10%	Change in No. of Days > 10%
<b>Federally and Tribally Designated Class I Areas</b>			
<b>Badlands National Park <sup>1</sup></b>	238	19	26
<b>Bob Marshall WA</b>	12	2	4
<b>Bridger WA</b>	47	4	7
<b>Fitzpatrick WA</b>	42	3	5
<b>Fort Peck Indian Reservation</b>	69	8	9
<b>Gates of the Mountain WA</b>	14	6	7
<b>Grand Teton National Park</b>	26	2	5
<b>North Absaorka WA</b>	47	6	6
<b>North Cheyenne Indian Reservation</b>	305	5	10
<b>Red Rock Lakes</b>	16	3	5
<b>Scapegoat WA</b>	14	4	4
<b>Teton WA</b>	40	4	5
<b>Theodore Roosevelt National Park</b>	98	15	22
<b>UL Bend WA</b>	49	4	5
<b>Washakie WA</b>	53	2	3
<b>Wind Cave National Park</b>	261	11	15
<b>Yellowstone National Park</b>	42	7	8
<b>Sensitive Class II Areas</b>			
<b>Absaorka Beartooth WA</b>	53	3	5
<b>Agate Fossil Beds National Monument</b>	199	26	30
<b>Big Horn Canyon National Rec. Area</b>	108	7	8
<b>Black Elk WA</b>	263	16	22
<b>Cloud Peak WA</b>	137	8	8
<b>Crow Indian Reservation</b>	284	10	15
<b>Devils Tower National Monument</b>	279	15	21
<b>Fort Belknap Indian Reservation</b>	46	3	4
<b>Fort Laramie National Historic Site</b>	153	27	30
<b>Jedediah Smith WA</b>	23	1	2
<b>Jewel Cave National Monument</b>	267	14	18
<b>Lee Metcalf WA</b>	25	2	4
<b>Mount Naomi WA</b>	8	6	8
<b>Mount Rushmore National Monument</b>	248	19	25
<b>Popo Agie WA</b>	47	7	8
<b>Soldier Creek WA</b>	223	23	29
<b>Wellsville Mountain WA</b>	6	5	7
<b>Wind River Indian Reservation</b>	66	12	15

<sup>1</sup>The U.S. Congress designated the Wilderness Area portion of Badlands National Park as a mandatory Federal PSD Class I area. The remainder of Badlands National Park is a PSD Class II area.

Source: PRB Coal Review Task 3A Report (BLM 2006a)

The PRB Coal Review used the REMI Policy Insight regional economic model to project cumulative employment and population levels and associated impacts in the PRB for the upper and lower coal production scenarios in 2010, 2015, and 2020. Table ES-5 presents the recent and projected population levels for the counties included in the PRB Coal Review socioeconomic analysis.

Table ES-5. Recent and Projected PRB Population.

<b>YEAR</b>	<b>Campbell County</b>	<b>Converse County</b>	<b>Crook County</b>	<b>Johnson County</b>	<b>Sheridan County</b>	<b>Weston County</b>	<b>Six County PRB Total</b>
<b>Census</b>							
<b>2000</b>	33,698	12,104	5,895	7,108	26,606	6,642	92,053
<b>2003</b>	36,381	12,326	5,971	7,530	27,116	6,665	95,989
<b>2006</b>	38,934	12,866	6,255	8,014	27,673	6,762	100,504
<b>Lower Coal Production Scenario</b>							
<b>2010</b>	45,925	13,103	6,542	8,389	28,459	7,108	109,526
<b>2015</b>	48,905	13,671	6,759	8,867	30,016	7,174	115,392
<b>2020</b>	50,995	14,193	6,989	9,326	31,467	7,208	120,178
<b>Upper Coal Production Scenario</b>							
<b>2010</b>	47,662	13,160	6,570	8,424	28,579	7,137	111,532
<b>2015</b>	51,558	13,763	6,802	8,924	30,214	7,219	118,480
<b>2020</b>	54,943	14,313	7,045	9,403	31,733	7,266	124,703

Source: U.S. Census Bureau (2006b - historical data) and PRB Coal Review Task 3C Report (BLM 2005e)

This DEIS presents the BLM’s analysis of environmental impacts under authority of the NEPA and associated rules and guidelines. The BLM will use this analysis to make a leasing decision. The decision to lease these lands is a necessary requisite for mining, but is not in itself the enabling action that will allow mining. The most detailed analysis prior to mine development would occur after the lease is issued, when the lessee files an application for a surface mining permit and mining plan approval, supported by extensive proposed mining and reclamation plans, to the WDEQ/LQD.