FINAL

ENVIRONMENTAL IMPACT STATEMENT FOR THE HORSE CREEK COAL LEASE APPLICATION (FEDERAL COAL LEASE APPLICATION WYW141435)

Prepared for

U.S. Department of the Interior
Bureau of Land Management
Casper Field Office
Casper, Wyoming

and

Cooperating Agency

U.S. Office of Surface Mining
Reclamation and Enforcement
Denver, Colorado

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EXECUTIVE SUMMARY

On February 14, 1997, ACC[1] filed an application with the BLM for a maintenance coal lease for federal coal reserves located north and west of ACC's existing Antelope Mine (Figures ES-1 and ES-2). This coal lease application, which is referred to as the Horse Creek LBA Tract, was assigned case file number WYW141435. As applied for, this tract includes approximately 2,838 acres and approximately 357 million tons of in-place federal coal. The lands applied for in this application are located in southeastern Campbell County and northeastern Converse County, Wyoming, approximately 20 miles southeast of Wright, Wyoming.

This lease application was reviewed by the BLM, Wyoming State Office, Division of Mineral and Lands Authorization, and it was determined that the application and the lands involved met the requirements of the regulations governing coal leasing on application at Title 43 of the Code of Federal Regulations Part 3425.1 (43 CFR 3425.1). The application was also reviewed by the PRRCT at their public meeting on April 23, 1997, in Casper, Wyoming. At that time, the PRRCT recommended that the BLM process the lease application as an LBA. 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 NEPA by evaluating the environmental impacts of leasing and mining 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 will use the analysis in this EIS to decide whether or not to hold a public, competitive, sealed-bid coal lease sale for the federal coal tract and issue a federal coal lease. If a sale is held, the bidding at that sale would be open to any qualified bidder; it would not be limited to the applicant. If a 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 at that sale 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 at the sale. ACC previously applied for federal coal under the LBA process, was the successful high bidder when a competitive lease sale was held, and, in 1996, was issued a maintenance lease adjacent to this same mine.

Other agencies, including OSM, a cooperating agency on this EIS, will

[1] Refer to page vii for a list of abbreviations and acronyms used in this document

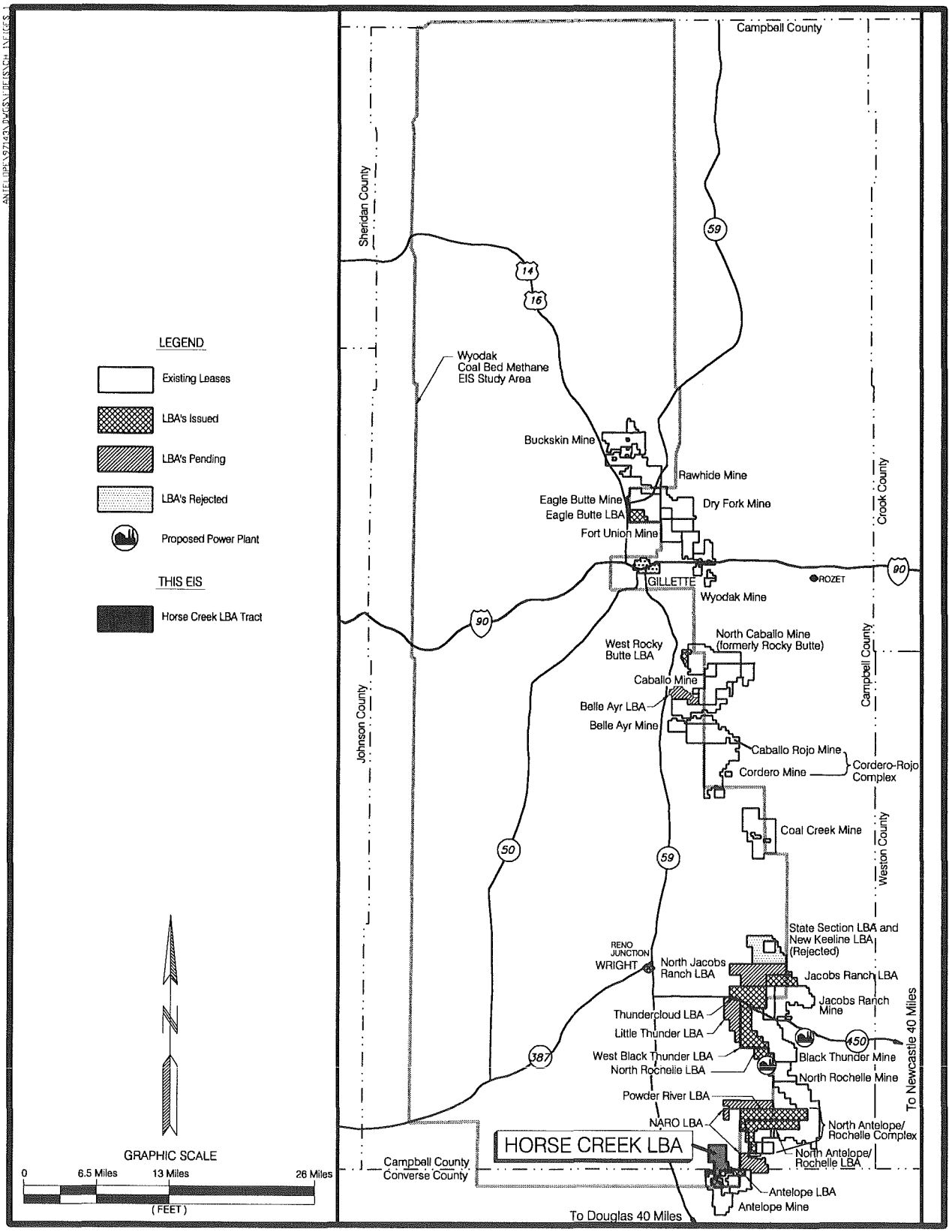

Figure ES-1. General Location Map with Federal Coal Leases, LBA's, and Wyodak Coal Bed Methane EIS Study Area.

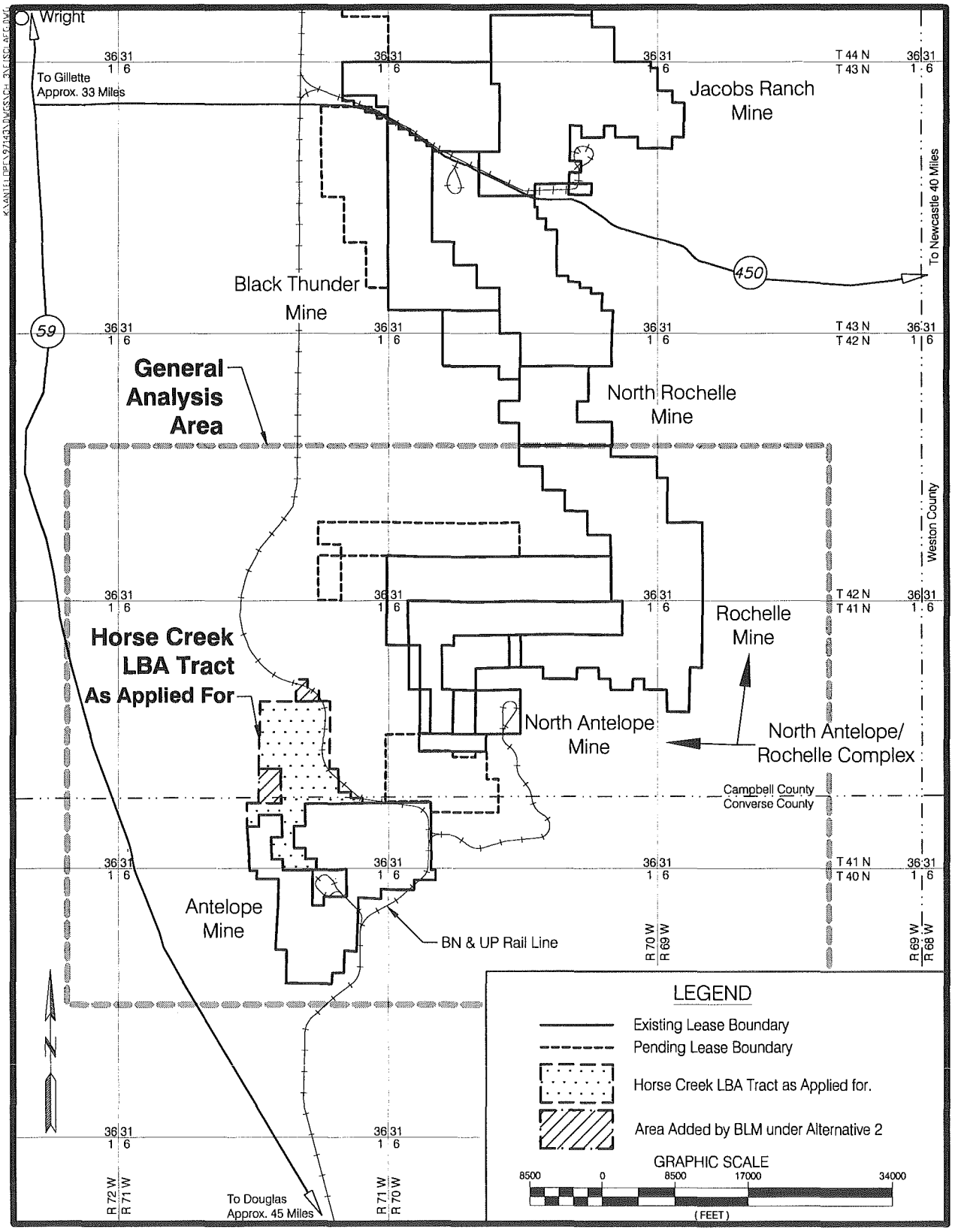

Figure ES-2. Location Map Showing Southern PRB Mines and General Analysis Area.

also use this analysis to make decisions related to leasing and mining the federal coal in this tract. The USFS is not a cooperating agency on this EIS. As a result of a recent land exchange, there are currently no federal surface lands managed by the USFS included in the Horse Creek LBA Tract.

The lands in the Horse Creek LBA Tract have been subjected to four coal planning screens and determined acceptable for consideration for leasing. A decision to lease the federal coal lands in this application would be in conformance with the BLM Resource Management Plans for the Buffalo and Casper Field Offices. A portion of the Horse Creek LBA Tract is located within the BN & UP Railroad right-of-way. This coal will not be mined because it was determined to be unsuitable for mining according to the coal leasing unsuitability criteria. It was included in the tract to allow maximum recovery of the mineable reserves adjacent to the right-of-way. ACC estimates that the Horse Creek LBA Tract includes approximately 264.5 million tons of mineable coal under the Proposed Action. ACC's approved mining plan also avoids disturbing the Antelope Creek Valley, so any coal resources in the Horse Creek LBA Tract that are beneath Antelope Creek would not be recovered.

The LBA sale process is, by law and regulation, an open, public, competitive sealed-bid process. If a lease sale is held for this LBA tract, the applicant (ACC) may not be the successful high bidder. The analysis in this EIS assumes that ACC would be the successful bidder on the Horse Creek LBA Tract if a sale is held, and that it would be mined as a maintenance tract for the Antelope Mine.

This DEIS analyzes three alternatives:

The Proposed Action is to hold a competitive coal lease sale and issue a maintenance lease to the successful bidder for the Horse Creek LBA Tract as applied for (Figure ES-2). Under this alternative, ACC projects that coal production would increase to 30 mmtpy and employment would increase to 250 persons. The Proposed Action is BLM's preferred alternative.

Alternative 1 is the No Action Alternative. Under this alternative, the LBA tract would not be leased, but the existing leases at the Antelope Mine would be developed according to the existing approved mining plan. Under this alternative, ACC projects that average annual production would probably not exceed 22 mmtpy and average employment would remain at 180 persons.

Alternative 2 considers holding a competitive coal lease sale and issuing a maintenance lease to the successful bidder for the Horse Creek LBA Tract as reconfigured by BLM (Figure ES-2). BLM developed an amended tract configuration in

order to avoid a potential future bypass situation and/or to enhance the value of the federal coal that is still unleased in this area. Under this alternative, the Horse Creek LBA Tract includes 3,215.0 acres and approximately 298 million tons of mineable federal coal. Production and employment would be similar to the Proposed Action.

Table ES-1 summarizes coal production, surface disturbance, and mine life for the Antelope Mine under each alternative. The environmental impacts of mining the LBA tract would be similar under the Proposed Action and Alternative 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 competitive sale of the LBA tract.

Critical elements of the human environment (BLM 1988) that could be affected by the proposed project include air quality, cultural resources, floodplains, Native American religious concerns, threatened, endangered, and candidate (T&E) plant and animal species, hazardous or solid wastes, water quality, wetlands/riparian zones, environmental justice, and invasive nonnative species. Four critical elements (areas of critical environmental concern, prime and unique farmland, wild and scenic rivers, and wilderness) are not present in the project area and are not addressed further. In addition to the critical elements that are potentially present in the project area, the EIS discusses the status and potential effects of the project on topography and physiography, geology and mineral resources, soils, water availability or quality, 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 Horse Creek LBA Tract is located in the south-central part of the PRB. The elevation ranges from about 4,500 to 4,800 ft in an area of dissected uplands. In the LBA tract, there are two mineable coal seams, referred to as the Anderson and Canyon. The Anderson coal seam averages 40 feet in thickness on the LBA tract and the Canyon coal seam averages 35 feet. The average overburden thickness is about 150 ft. The interval between the two coal seams is variable but averages about 45 feet.

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. Some spoil and topsoil would be stockpiled for later reclamation, some would be directly placed into the already mined pit. Horse Creek would be diverted into temporary channels or blocked to

Table ES-1. Summary Comparison of Coal Production, Surface Disturbance, and Mine Life for Horse Creek LBA Tract and Antelope Mine

Item	No Action Alternative (Existing Antelope Mine)	Added by Proposed Action	Added by Alternative 2
Mineable Coal (as of January 1, 2000)	174.8 million tons	264.5 million tons	299.7 million tons
Recoverable Coal [1] (as of January 1, 2000)	161.0 million tons	246.0 million tons	278.7 million tons
Coal Mined Through 1999	121.5 million tons	--	--
Lease Acres[2]	6,008.9 acres	2,837.9 acres	3,215.0 acres
Total Area To Be Disturbed[2]	5,172.0 acres	3,189.6 acres	3,580.9 acres
Permit Area[2]	7,683.3 acres	3,189.2 acres	3,580.0 acres
Average Annual Post-1999 Coal Production	22 million tons	8 million tons	8 million tons
Remaining Life Of Mine (post-1999)	7.3 years	8 years	9 years
Average No. Of Employees	180	70	70
Total Projected State Revenues (post-1999)[3]	$ 177.1 million	$ 270.6 million	$ 306.6 million[5]
Total Projected Federal Revenues (post-1999)[4]	$ 40.3 million	$ 90.6 million	$ 102.6 million[5]

[1] Assumes 95 percent recovery of leased coal remaining after eliminating coal within 100 feet of the railroad and county road rights of way.

[2] For the No Action Alternative, disturbed acreage is less than leased acreage because some of the leased coal is beneath the railroad and County Road 37 and will not be mined. For the Proposed Action and Alternative 2, the disturbed acreage exceeds the leased acreage because of the need for highwall reduction, topsoil removal and other activities outside the lease boundaries. The permit area is larger than leased or disturbed areas to assure that all disturbed lands are within the permit boundary and to allow easily defined legal land description.

[3] Projected revenue to State of Wyoming is $1.10 per ton of coal sold and includes income from severance tax, property and production taxes, sales and use taxes, and Wyoming's share of federal royalty payments (University of Wyoming 1994).

[4] Federal revenues based on $4.00/ton price x federal royalty of 12.5 percent x amount of recoverable coal plus bonus payment on LBA coal of 22¢/ton based on average of last nine LBA's (see Table 1-1) x amount of leased coal less state's 50 percent share.

[5] The projected federal and state income shown under this alternative may be overstated. The inclusion of the higher-cover coal added under Alternative 2 would probably reduce the per ton bonus price relative to Alternative 1, which would decrease the anticipated state and federal revenues.

prevent flooding of the pits. Following reclamation, the average surface elevation would be approximately 36 ft lower due to removal of the coal. The reclaimed land surface would approximate premining contours and the basic drainage network would be retained, but the reclaimed surface would contain fewer, 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 land use.

The geology from the base of the coal to the land surface would be subject to considerable long-term change on the LBA tract under either action alternative. An average of 150 ft of overburden, 45 ft of interburden and 75 ft of coal would be removed from the LBA tract. The replaced overburden would be a relatively homogeneous mixture compared to the premining layered overburden.

Development of other minerals potentially present on the LBA tract could not occur during mining, but could occur after mining. Coal bed methane associated with the coal at the time it is mined would be irretrievably lost.

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 much 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).

Moderately adverse short-term impacts to air quality would be extended onto the Horse Creek LBA Tract during the time it is mined if a lease is issued. Dust would be visible to the public when mining occurs near County Road 37 and Antelope Road. TSP concentrations would be elevated in the vicinity of mining operations on the LBA tract, but would not violate federal or Wyoming primary and secondary standards outside the mine's permit boundary, even when combined with emissions from adjacent mines. Concentrations of gaseous emissions would remain within acceptable federal and state standards. Federal and state air quality standards have not been exceeded by all existing industrial development in the southeastern PRB, including the existing mines. This is not predicted to change as a result of mining the LBA tract.

Streamflows in Horse Creek would be diverted or captured during mining. Changes in runoff characteristics and sediment discharges would occur during mining of the LBA tract, and erosion rates could reach high values on the disturbed areas because of vegetation removal. However, state and federal regulations require that surface runoff from mined lands be treated to meet effluent standards, so sediment would be deposited in

ponds or other sediment-control devices. After mining and reclamation are complete, surface water flow, quality, and sediment discharge would approximate premining conditions.

Mining the LBA tract would increase both the area of lowered water levels in the coal and overburden aquifers, and the area where the existing coal and overburden aquifers would be replaced by mine backfill. Drawdown in the continuous coal aquifer would be expected to increase roughly in proportion to the increase in area affected by mining and would extend farther than drawdown in the discontinuous overburden aquifers. The data available indicate that hydraulic properties of the backfill would be comparable to the premining overburden and coal aquifers. Total dissolved solids levels in the backfill could initially be expected to be higher than in the premining Wasatch Formation aquifer, but would be expected to meet Wyoming Class III standards for use as stock water.

Based on preliminary AVF determinations, it is unlikely that any portions of Horse Creek on the LBA tract meet the criteria to be AVF's significant to agriculture. AVF's that are not significant to agriculture can be disturbed during mining but must be restored as part of the reclamation process. Antelope Creek Valley would not be disturbed by mining at the Antelope Mine under the approved mining and reclamation plan. Jurisdictional wetlands that are disturbed by mining must be replaced during the reclamation process.

Mining would progressively remove the native vegetation on the LBA tract. Reclamation and revegetation of this land would occur contemporaneously with mining. Re-established vegetation would be dominated by species mandated in the reclamation seed mixtures (to be approved by WDEQ). 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 impact associated with this vegetative change would potentially be a decreased big game habitat carrying capacity. However, a diverse, productive, and permanent vegetative cover would be established on the LBA tract within about 10 years following reclamation, 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. The surface of the LBA tract is privately owned, and the private landowners would have the right to manipulate the vegetation on their lands as they desire once the final reclamation bond is released. No T&E or candidate plant species have been

found on the Horse Creek LBA Tract in surveys to date.

In the short term, wildlife would be displaced from the LBA tract in areas of active mining and the acreage of habitat available for wildlife populations would be reduced. However, the LBA tract does not contain any unique or crucial big game habitat, and habitat would be disturbed in parcels, 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 wildlife surveys specific to the proposed lease tract were conducted in the summer of 1999. No T&E species or potential habitat were found during those surveys. Lease and permit conditions state that coal mining operations may be limited if they will occur within the habitat boundaries of a threatened, endangered, candidate, or other special status plant or animal species if surveys performed prior to surface disturbance indicate that any threatened, endangered, candidate, or other special status plant or animal species is present and that the potential impacts to that species cannot be satisfactorily resolved.

Active mining would preclude other land uses. Recreational use of the LBA tract would be severely limited during mining. 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 are and will continue to contribute to a reduction in hunting opportunities for some animals (pronghorn, mule deer, and sage grouse).

Mining would also impact oil and gas development on the leased lands during active mining. No producing oil wells are present within the Horse Creek LBA tract. There is one plugged and abandoned deep oil and gas test well present on the LBA tract under the Proposed Action, another plugged and abandoned oil and gas test well is located on the LBA tract under Alternative 2, and there is one CBM well location posted on a private oil and gas lease on the LBA tract under the Proposed Action and Alternative 2. The federal oil and gas rights are leased. New drilling would not be possible in areas of active mining, but could potentially take place in areas not being mined, or in reclaimed areas. CBM associated with the coal at the time it is mined would be irretrievably lost as the coal is removed. In the event of a conflict between oil and gas and coal lease holders, BLM policy is to encourage optimization of the recovery of both coal and CBM resources to ensure that the public receives a reasonable return for the publicly-owned resources.

Cultural resources on the LBA tract would be impacted by mining, but adverse impacts would be mitigated through data recovery and/or avoidance of significant properties. Formal Wyoming State Historic Preservation Office (SHPO)

consultation is required for concurrence with determination of the eligibility of sites for inclusion on the National Register of Historic Places (NRHP) prior to mining. The eligible cultural properties on the LBA tract which cannot be avoided or which have not already been subjected to data recovery action would be carried forward in the mining and reclamation plan as requiring protective stipulations until a testing, mitigation, or data recovery program is developed in consultation with the SHPO.

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.

No unique or significant paleontological resources have been identified on the Horse Creek LBA Tract, and the likelihood of encountering significant paleontological resources is small.

Mining activities at the existing Antelope Mine are currently visible from County Road 37 and the Antelope Road, and mining activities on the Horse Creek LBA Tract would also be visible from these local access 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.

Impacts from noise generated by mining activities on the LBA tract are not expected to be significant due to the remote nature of the site.

No new or reconstructed transportation facilities would be required under the Proposed Action or Alternative 2. Leasing the LBA tract would extend the length of time that coal is shipped from the permitted Antelope Mine. Active pipelines and utility lines would have to be relocated in accordance with previous agreements, or agreements would have to be negotiated for their relocation.

Royalty and bonus payments for the coal in the LBA tract would be collected by the federal government and split with the state. A 1994 University of Wyoming study estimated that the total direct fiscal benefit to the State of Wyoming from coal mining taxes and royalties is $1.10/ton of coal mined. Using that estimate, mining the coal in the Horse Creek LBA Tract under the action alternatives would provide a tax and royalty benefit to the State of Wyoming of $270.6 to $306.6 million, expressed in current dollars. Mine life, and thus employment, would be extended 8 to 9 years at the Antelope Mine, and ACC projects that employment at the mine would increase by up to 70 people.

With regard to Environmental Justice issues, it was determined that potentially adverse impacts do not disproportionately affect minorities, low-income groups or Native American tribes or groups. No tribal lands or Native American

communities are included in this area, and no Native American treaty rights or Native American trust resources are known to exist for this area.

Under the No Action Alternative, the impacts described in the preceding paragraphs to topography and physiology, geology and minerals, soils, air quality, water resources, alluvial valley floors, wetlands, vegetation, wildlife, threatened, endangered and candidate species, land use and recreation, cultural resources, Native American concerns, paleontological resources, visual resources, noise, transportation, and socioeconomics would occur on the existing Antelope coal leases, but these impacts would not be extended onto the LBA tract.

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. One issue of current concern is the release of NO_x from blasting, and the resulting formation of low-lying orange clouds that can be carried outside the mine permit areas by wind. As a result of this concern, industry and agency representatives have met and discussed possible causes and solutions, including improving blasting techniques or explosives, reducing powder factors, and analyzing the composition of the orange clouds, and these procedures are being evaluated. BLM is not involved in the regulation of blasting activities at the coal mines in the Powder River Basin; however, BLM supports the continuing efforts of the involved regulatory agencies to develop appropriate procedures and techniques to resolve this problem.

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, the BLM Wyoming State Office has issued 9 federal coal leases containing approximately 2.365 billion tons of coal using the LBA process. This leasing process has undergone the scrutiny of two appeals to the Interior Board of Land Appeals and one audit by the General Accounting Office.

Six additional coal lease applications, including the Horse Creek application, are currently pending and one application (New Keeline LBA) was rejected in 1997. The applicant for the New Keeline LBA appealed the rejection to the IBLA and submitted a new application (State Section LBA) covering the same area in January 2000. The pending LBA applications contain approximately 2.2 billion tons of coal.

The Wyoming and Montana BLM state offices completed a study entitled "*Powder River Basin Status Check*" in 1996. The purpose of this study was to document actual

mineral development impacts in the Powder River Basin from 1980 to 1995 and compare them with mineral development impacts that were predicted to occur by 1990 in the five previously prepared Powder River Basin regional EIS's. This study concluded that, in general, the levels of development in 1995 were within the levels predicted in the previously prepared regional EIS's. The status check was updated prior to the 1997 and 1999 PRRCT public meetings in Casper, Wyoming and Billings, Montana.

Four of the previously prepared regional EISs evaluated coal development in the Powder River Basin in Wyoming. They are:

Final Environmental Impact Statement, Eastern Powder River Coal Basin of Wyoming, BLM, October 1974;

Final Environmental Impact Statement, Eastern Powder River Coal, BLM, March 1979;

Final Environmental Impact Statement, Powder River Coal Region, BLM, December 1981;

Draft Environmental Impact Statement, Round II Coal Lease Sale, Powder River Region, BLM, January 1984.

For Wyoming, the status check compared actual development in Campbell and Converse counties with predictions in the 1979 and 1981 Final EIS's, and USGS Water Resources Investigations Report 88-4046, entitled "*Cumulative Potential Hydrologic Impacts of Surface Coal Mining in the Eastern Powder River Structural Basin*," by Martin and others.

In 1999, Campbell and Converse Counties produced approximately 319.9 million tons of coal, according to the records of the Wyoming State Inspector of Mines. In 1980 total state production was 94 million tons of coal. The increasing state production is primarily due to increasing sales of low-sulfur, low-cost PRB coal to electric utilities who must comply with Phase I requirements of Title III of the 1990 Clean Air Act Amendments. Electric utilities account for 97% of Wyoming's coal sales. Oil production has decreased in the Wyoming Powder River Basin since 1990. In recent years, more wells have been plugged annually than have been drilled.

Natural gas production has been increasing, particularly in Campbell County, due to the development of shallow CBM resources west of the coal mines. As of November 1999, in the PRB in Wyoming, approximately 1,500 CBM wells were reporting production. Since 1990, seven EA's and two EIS's have been prepared to analyze the impacts of CBM development in Campbell County. BLM has begun work on an EA and is planning an EIS to analyze the impacts of drilling additional CBM wells in the Powder River Basin. The next EA will analyze the impact of developing CBM resources on undrilled federal leases in the Wyodak project area adjacent to state or private leases with producing CBM wells. If the federal leases are not developed soon, the federal CBM resources may be drained by the

wells on the adjacent leases. The proposed EIS will analyze the potential impacts of proposed additional CBM development in the Wyoming portion of the basin and update the BLM planning documents in the area of CBM development interest. The regional coal EIS's (BLM 1974, 1979, 1981, 1984) and the Buffalo RMP (BLM 1985) analyzed oil and gas development but did not anticipate that the oil and gas development would include production of CBM resources. Under the current process for approving CBM drilling, CBM wells can be drilled on private and state oil and gas leases after approval by the Wyoming Oil and Gas Conservation Commission and the Wyoming State Engineer's Office. On federal oil and gas leases, BLM must analyze the individual and cumulative environmental impacts of all drilling, as required by NEPA, before CBM drilling can be authorized. Approximately 88% of the coal rights in the current CBM project area are federal but only about half of the oil and gas rights in this area are federal.

Water and methane are produced from the coal by CBM wells, and the area of CBM development in the PRB is west of the existing coal mines. Therefore, the potential exists for overlapping groundwater drawdown in the coal if both resources are produced. Currently, CBM development in the vicinity of the group of the five mines nearest the LBA tract is limited, but based on current trends, it is likely that development will continue southward in the direction of these mines. If CBM is developed adjacent to the five southern mines, the resulting groundwater withdrawal from the Wyodak coal would overlap additively with groundwater drawdown in the Wyodak caused by coal mining.

Other mineral development levels in the Wyoming PRB are currently lower than predicted in the EIS's. In the 1970's, significant uranium development was anticipated in southwest Campbell County and northwest Converse County. This development did not materialize because the price of uranium dropped in the early 1980's. There are currently three *in situ* uranium operations in Converse and Johnson counties, but no mines and no mills. Uranium production has been increasing since 1990.

In addition to the ongoing coal and CBM development, four other projects were recently completed, in progress or planned during the preparation of this EIS in the vicinity of the southern mine group: 1) North Rochelle Mine facilities and rail loop; 2) the ENCOAL Plant, which would be located within the rail loop at the North Rochelle Mine; 3) the Two Elk power plant, which would be located east of the Black Thunder Mine; and 4) construction and use of the proposed DM&E rail line. Air quality, water quantity and employment levels in particular may be cumulatively impacted if these projects are added to existing coal mining and CBM production. The duration of these cumulative impacts would be extended by leasing the LBA tract.

The existing and proposed development in the PRB has and will

continue to result in the introduction of additional roads, railroads, power lines, fences, mine structures, and oil and gas production equipment. This area has already undergone change from a semi-agriculturally based economy to a coal mining and oil and gas economy. Environmentally, the open, basically treeless landscape has been visibly altered by construction, equipment, and human activities. Leasing of the LBA tract would increase the total area that would be affected by mining but would not cause a significant cumulative change in daily impacts because mining disturbance is progressive, and reclamation proceeds contemporaneously. Cumulative impacts vary by resource and range from being almost undetectable to being substantial. Cumulative impacts on air quality, groundwater quantity and wildlife habitat (particularly antelope) have created the greatest concern.

A regional cumulative impact analysis was performed for this EIS to estimate impacts on air quality in the year 2015. This analysis was an update and modification to the far-range cumulative air quality analysis prepared for the Wyodak Coal Bed Methane Project EIS. Tables ES-2 and ES-3 show the results of this analysis. The results show that the maximum projected cumulative impacts on air quality are much smaller than regulatory standards and increments (Table ES-2). However, the predicted impacts to visibility are significant, particularly at Badlands National Park (Table ES-3).

Figure ES-3 shows modeled and extrapolated worst-case coal aquifer drawdown as a result of mining at the southern group of mines. Monitoring of backfill areas indicates that reclaimed areas are being recharged with water generally suitable for livestock use (the premining use).

Wildlife habitat quality has declined in the PRB due to a continuing trend of landscape fragmentation from roads, rail lines, oil and gas wells, coal mines, and fences. Mining of the LBA tract would add to this habitat fragmentation. Wildlife monitoring indicates that wildlife are using reclaimed areas.

This EIS 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 Wyoming Department of Environmental Quality.

Table ES-2. Results of Air Quality Impact Analysis ($\mu g/m^3$)

Area	Annual NO_2	24-hr PM_{10}	Annual PM_{10}	3-hr SO_2	24-hr SO_2	Annual SO_2
CUMULATIVE IMPACTS						
Northern Cheyenne Reservation, MT	0.03	0.58	0.02	1.60	0.56	0.02
Badlands National Park, SD	1.26	0.65	0.10	3.61	1.20	0.21
Wind Cave National Park, SD	0.16	0.62	0.06	2.17	0.84	0.08
Class I PSD Increment	**2.5**	**4**	**8**	**25**	**5**	**2**
Black Elk Wilderness, SD	0.09	1.04	0.05	2.48	0.79	0.07
Jewel Cave National Monument, SD	0.13	0.76	0.08	3.92	0.87	0.10
Mt. Rushmore National Monument, SD	0.08	1.01	0.05	1.93	0.55	0.06
Cloud Peak Wilderness, WY	0.01	0.90	0.04	1.08	0.32	0.01
Devils Tower National Monument, WY	0.13	0.80	0.16	2.84	0.50	0.07
National Ambient Air Quality Standard	**100**	**150**	**50**	**1300**	**365**	**80**

Table ES-3. Predicted Annual Days of Visibility Reductions At Class I and Class II Sensitive Areas from Cumulative Sources

Location	Type of Area	Number of Days deciview change >0.5	Number of Days deciview change >1.0
Northern Cheyenne Reservation	Class I	18	8
Badlands National Park	Class I	173	70
Wind Cave National Park	Class I	94	45
Black Elk Wilderness	Class II	66	28
Jewel Cave National Monument	Class II	72	32
Mt. Rushmore National Monument	Class II	58	22
Cloud Peak Wilderness	Class II	15	4
Devils Tower National Monument	Class II	70	28

Note: The Northern Cheyenne Reservation is a redesignated Class I area and is not addressed by existing visibility regulations which apply to the federally mandated Badlands and Wind Cave Class I areas.

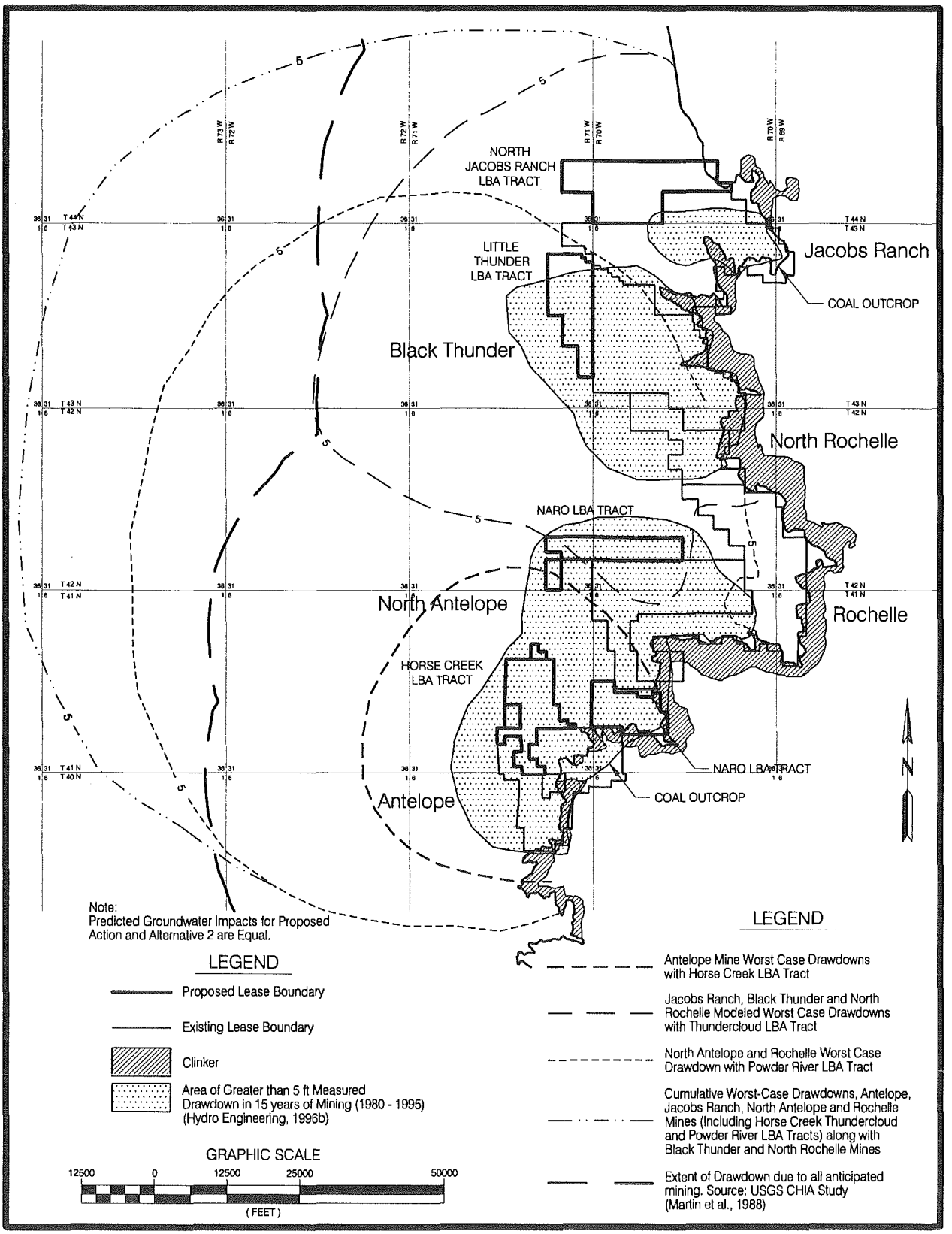

Figure ES-3. Modeled and Extrapolated Worst-Case Coal Aquifer Drawdown Scenarios Showing Extent of Actual 1995 Drawdowns and USGS Predicted Cumulative Drawdowns.