

2.0 PROPOSED ACTION AND ALTERNATIVES

This chapter describes the Proposed Action and alternatives to this action. The Proposed Action is to hold a competitive lease sale for the federal coal lands in the Horse Creek LBA Tract as applied for by ACC¹. Under this alternative, it is assumed that the tract would be developed as a maintenance tract for an existing mine. The No Action Alternative (Alternative 1) is to reject the application and not hold a lease sale for these federal coal lands. Selection of this alternative would limit mining operations at the Antelope Mine to ACC's existing federal, state, and private coal leases. Mining operations on these leases are already approved under the existing mining and reclamation plan for the Antelope Mine. Other alternatives considered include:

- holding a competitive lease sale for federal coal lands in the Horse Creek LBA as modified by the BLM, with the assumption that it would be developed as a maintenance tract for an existing mine (Alternative 2);
- holding a competitive lease sale for federal coal lands in the Horse Creek LBA Tract (as applied for or as modified by BLM), with the assumption that it would be developed as

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Refer to page vii for a list of abbreviations and acronyms used in this document.

a new mine (Alternative 3); and

- Postponing the coal lease sale for the Horse Creek LBA Tract.

The Horse Creek LBA Tract as applied for (Proposed Action) and as amended by BLM (Alternative 2) are shown in Figure 2-1.

LBA tracts are nominated for leasing by companies with an interest in acquiring them, but as discussed in Chapter 1, the LBA process is, by law and regulation, an open, public, competitive sealed-bid process. If the decision reached after this EIS is completed is to hold a lease sale, the applicant (ACC) may not be the high bidder. The Proposed Action and Alternative 2 considered in this EIS assume that ACC would be the successful bidder if a competitive sale is held, and that the Horse Creek LBA Tract would be mined as a maintenance tract for the permitted Antelope Mine. Alternative 3 assumes that ACC would not be the successful bidder if a competitive sale is held, and that the Horse Creek LBA Tract would be developed as a new mine.

If a decision is made to hold a competitive lease sale and there is a successful bidder, a detailed mining and reclamation plan must be developed by the successful bidder and approved before mining can begin on the tract. As part of the approval process, the mining and reclamation plan would undergo detailed review by state and federal agencies. This plan would potentially

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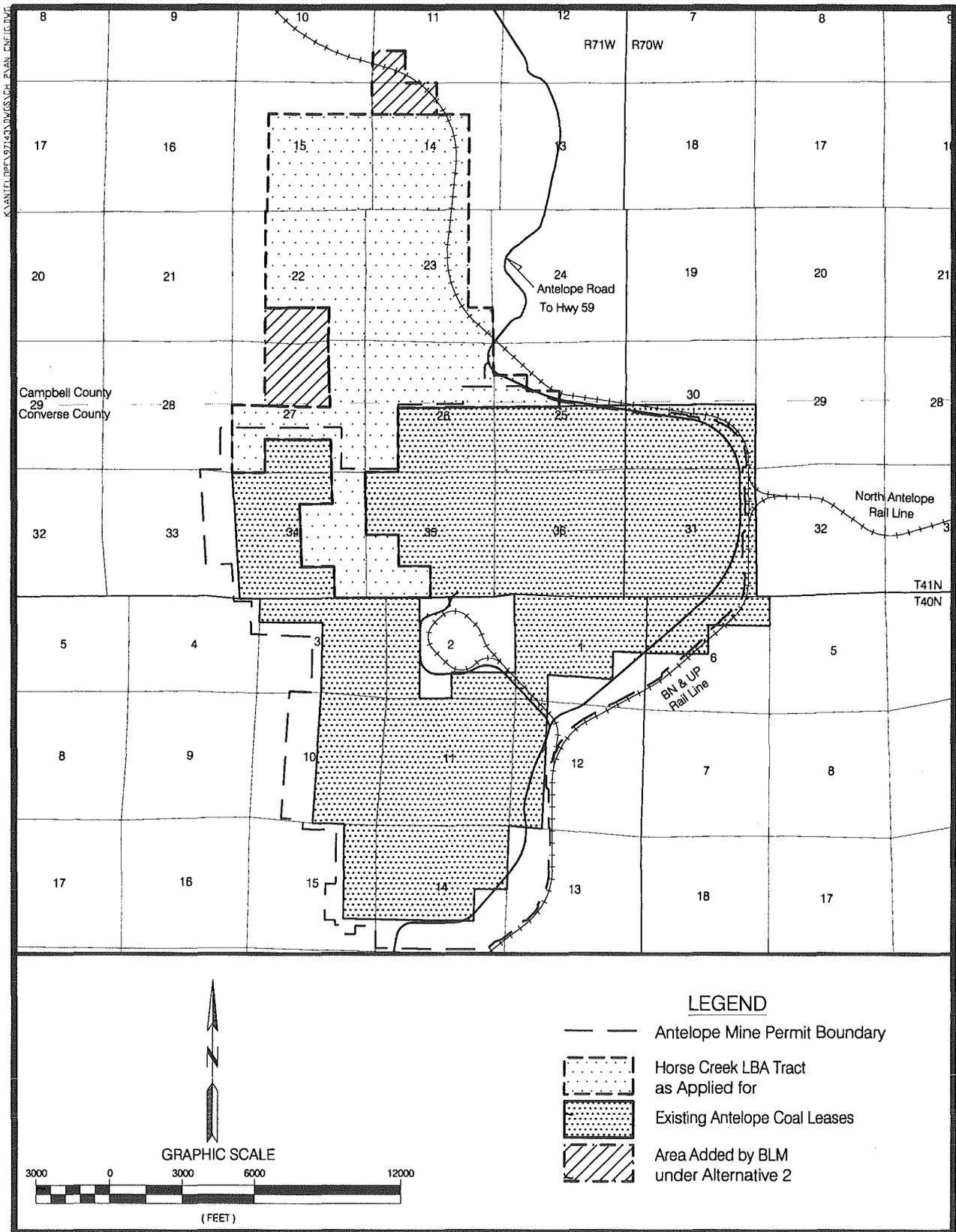


Figure 2-1. Horse Creek LBA Tract Configurations.

differ from the plan used to analyze the impacts of the Proposed Action and Alternative 2 in this EIS, but the differences would not be expected to significantly change the impacts described here. These differences would typically be related to the details of mining and reclaiming the tract but major factors like tons of coal mined, yards of overburden removed, acres disturbed, etc. would not be significantly different from the plan used in this analysis.

2.1 Proposed Action

Under the Proposed Action, the Horse Creek LBA Tract, as applied for by ACC, would be offered for lease at a competitive sale, subject to standard and special lease stipulations developed for the PRB (Appendix D). The boundaries of the tract would be consistent with the tract configurations proposed in the Horse Creek LBA Tract lease application (see Figure 2-1). The Proposed Action assumes that ACC will be the successful bidder on the Horse Creek Tract if it is offered for sale. The Proposed Action is the preferred alternative of the BLM.

The legal description of the proposed Horse Creek LBA Tract coal lease lands as applied for by ACC under the Proposed Action is as follows:

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

Section 14: Lots 5 through 7 and 10 through 15;
358.85 acres

Section 15: Lots 6 through 11 and 14 through 16;
371.58 acres
Section 22: Lots 1, 3 through 6 and 9 through 13;
421.70 acres
Section 23: Lots 2 through 7 and 10 through 16;
528.64 acres
Section 25: Lots 11 and 12 (S ½);
59.44 acres
Section 26: Lots 1 through 8, 12 and 13;
402.68 acres
Section 27: Lots 1 through 3, 5, 12 through 14 and 16;
334.85 acres
Section 34: Lots 1, 7, 8 through 10 and 16;
242.84 acres
Section 35: Lots 8 through 10;
117.33 acres

Total surface area applied for:
2,837.91 acres

Land descriptions and acreage are based on the BLM Status of Public Domain Land and Mineral Title approved Coal Plat as of December 19, 1996.

As indicated in Chapter 1, Section 1.4, some of the above described lands are unsuitable for mining due to the presence of the BN & UP railroad ROW. Although these lands would not be mined, they are included in the tract to allow recovery of all the mineable coal outside of the ROW and to comply with the coal leasing regulations, which do not allow leasing of less than 10 acre aliquot parts. ACC's approved mining plan avoids disturbing the Antelope Creek valley, so any coal resources

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included in the above-described lands that are beneath Antelope Creek would not be recovered. ACC estimates that the tract as applied for includes approximately 2,041 mineable acres with approximately 264.5 million tons of mineable coal, and that about 246 million tons of that coal would be recoverable. In order to recover all of the mineable coal included in the LBA tract, an area larger than the 2,041 mineable acres would have to be disturbed. BLM will independently evaluate the volume and average quality of the coal resources included in the tract as part of the fair market value determination process. BLM's estimate of the mineable reserves and average quality of the coal included in the tract will be published in the sale notice if the tract is offered for sale. Some coal quality information in the area of the Horse Creek LBA Tract is included in Section 3.3 of this document. The approved Antelope Mine Permit 525 Term T6 includes monitoring and mitigation measures for the Antelope Mine that are required by SMCRA and Wyoming State Law. If the Horse Creek LBA tract is acquired by ACC, these monitoring and mitigation measures would be included in the mine permit revision that must be approved before the Horse Creek LBA could be mined. These monitoring and mitigation measures are considered to be part of the Proposed Action during the leasing process because they are regulatory requirements.

The Horse Creek LBA Tract would be mined as an integral part of the Antelope Mine under the Proposed Action. The Antelope Mine is already

operating under an approved mining permit. The permit would require amendment to include the LBA tract. Since the Horse Creek LBA Tract would be an extension of the existing Antelope Mine, the facilities and infrastructure would be the same as those identified in the WDEQ/LQD Mine Permit 525 Term T6 approved October 29, 1998 for the Antelope Mine and the BLM Resource Recovery and Protection Plan approved October 28, 1997 for the Antelope Mine.

ACC has an air quality permit from WDEQ/AQD to mine up to 30 million tons of coal per year at the Antelope Mine. In 1999, the Antelope Mine produced 22.7 million tons (Wyoming State Inspector of Mines 2000). The Horse Creek LBA Tract will extend the life of this existing mine, allowing it to achieve and maintain the permitted coal production level of 30 million tons per year for approximately 8 additional years.

If ACC acquires the Horse Creek LBA Tract as applied for, they estimate that a total of 407 million tons of coal would be mined after 1999, with an estimated 246.0 million tons coming from the LBA tract. This estimate of recoverable reserves excludes the coal that would not be recovered beneath the BN & UP ROW and Antelope Creek, and assumes that about five percent of the coal would be lost under normal mining practices, based on historical recovery factors at the Antelope Mine. A total estimated 1,263.2 million bank cubic yards of overburden would be excavated after 1999, of which 370.4 million cubic yards are in the current permit area and 892.8 million cubic yards are in

the Horse Creek Tract. As of December 31, 1999, 122.6 million tons of coal and 249.2 million bank cubic yards of overburden had been excavated from within the current permitted area of the mine.

Topsoil removal with heavy equipment, using a combination of company-owned and contractor equipment, would proceed ahead of overburden removal. Whenever possible, direct haulage to a reclamation area would be done, but due to scheduling some topsoil would be temporarily stockpiled. As required by the reclamation plan, heavy equipment again will be used to haul and distribute the stockpiled topsoil. Trucks and shovels and draglines would remove overburden in all areas. Most overburden and all coal would be drilled and blasted to facilitate efficient excavation. As overburden is removed, most would be directly placed into areas where coal has already been removed. Elevations consistent with an approved PMT plan will be established as quickly as possible. Under certain conditions, the PMT may not be immediately achievable. This would occur when there is an excess of material which may require temporary stockpiling; when there is insufficient material available from current overburden removal operations; or when future mining could redisturb an area already mined.

Coal production would occur from two seams (Anderson and Canyon) at several working faces to enable blending of the coal to meet customer quality requirements, to comply with

BLM lease requirements for maximum economic recovery of the coal resource, and to optimize coal removal efficiency with available equipment. Mining efficiency and air quality protection would be facilitated by extensive use of near-pit crushers and overland conveyors from the crushers to the storage and loadout facilities.

Current employment at the Antelope Mine is 180. If the LBA tract is acquired, ACC anticipates that production would increase to 30 mmtpy, with employment increasing to 250 persons.

Hazardous and Solid Waste

Solid waste which is produced at the existing Antelope Mine consists of floor sweepings, shop rags, lubricant containers, welding rod ends, metal shavings, worn tires, packing material, used filters, and office and food wastes. Antelope Mine disposes of its solid wastes within its permit boundary in accordance with WDEQ-approved solid waste disposal plans. Sewage generated by mining is handled by WDEQ-permitted sewage systems present on the existing mine facilities. Maintenance and lubrication of most of the equipment takes place at existing shop facilities at the Antelope Mine.

Major lubrication, oil changes, etc., of most equipment are performed inside the service building lube bays, where waste oil is currently contained and deposited in storage tanks. The collected waste oils are then recycled offsite. These practices would not

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change if ACC acquires the Horse Creek Tract.

ACC has reviewed the EPA's *Consolidated List of Chemicals Subject to Reporting Under Title III of the Superfund Amendments and Re-authorization Act (SARA) of 1986* (as amended) and EPA's *List of Extremely Hazardous Substances* as defined in 40 CFR 355 (as amended) for hazardous substances used at the Antelope Mine. ACC maintains files containing Material Safety Data Sheets for all chemicals, compounds and/or substances which are or would be used during the course of mining.

ACC is responsible for ensuring that all production, use, storage, transport, and disposal of hazardous and extremely hazardous materials as a result of mining are in accordance with all applicable existing or hereafter promulgated federal, state, and local government rules, regulations, and guidelines. All mining activities involving the production, use, and/or disposal of hazardous or extremely hazardous materials are and would continue to be conducted so as to minimize potential environmental impacts.

ACC must comply with emergency reporting requirements for releases of hazardous materials. Any release of hazardous or extremely hazardous substances in excess of the reportable quantity, as established in 40 CFR 117, is reported as required by the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)*, as amended. The materials for which such notification must be given are the

extremely hazardous substances listed in Section 302 of the *Emergency Planning and Community Right to Know Act* and the hazardous substances designated under Section 102 of CERCLA, as amended. If a reportable quantity of a hazardous or extremely hazardous substance is released, immediate notice must be given to the WDEQ Solid and Hazardous Waste Division and all other appropriate federal and state agencies.

Each mining company is expected to prepare and implement several plans and/or policies to ensure environmental protection from hazardous and extremely hazardous materials. These plans/policies include:

- Spill Prevention Control and Countermeasure Plans;
- Spill Response Plans;
- inventories of hazardous chemical categories pursuant to Section 312 of SARA, as amended; and
- Emergency Response Plans.

All mining operations are also required to be in compliance with regulations promulgated under the Resource Conservation and Recovery Act, Federal Water Pollution Control Act (Clean Water Act), Safe Drinking Water Act, Toxic Substances Control Act, Mine Safety and Health Act, and the Federal Clean Air Act. In addition, mining operations must comply with all attendant state rules and regulations relating to hazardous

material reporting, transportation, management, and disposal.

Compliance with these rules is the current practice at Antelope Mine. Acquisition of the Horse Creek LBA Tract by ACC would not significantly change these current practices nor the amount or type of any wastes generated or disposed at the mine, although quantities of some wastes would increase in proportion to anticipated increases in coal production (e.g., fuel, lubricants, and shop and office wastes).

2.2 Alternative 1

Alternative 1 is the No-Action Alternative. Under the No-Action Alternative, ACC's coal lease application would be rejected, the Horse Creek LBA Tract would not be offered for competitive sale, and the coal contained within the tract would not be mined. Rejection of the application would not affect permitted mining activities on existing leases at the Antelope Mine. Approximately 6,009 acres are currently leased at Antelope Mine and about 5,172 acres will eventually be affected. Under the No-Action Alternative, average annual production will probably not exceed 22 mmtpy, and average employment will remain at 180 persons. Portions of the surface of the LBA tract would probably be disturbed due to overstripping to allow coal to be removed from existing, contiguous leases.

For purposes of this analysis, it is assumed that if the No-Action Alternative is selected the LBA tract would not be mined in the foreseeable

future. Selection of this alternative would not preclude leasing of this tract in the future; however, this assumption allows a comparison of the economic and environmental consequences of mining these lands versus not mining them. If the No-Action Alternative is selected as the preferred alternative, the assumption that the Horse Creek LBA Tract would not be mined in the foreseeable future would become more likely if leasing is postponed beyond the time that this tract could be mined as an extension of an existing operation.

2.3 Alternative 2

BLM is considering alternate tract configurations for the Horse Creek LBA Tract in order to minimize the risk of bypassing federal coal that would potentially become economically unrecoverable or to enhance the fair market value of the Horse Creek LBA Tract and/or the remaining unleased federal coal in this area. As part of the preliminary geologic analysis of the federal coal resources in and around the Horse Creek LBA Tract, the BLM identified adjacent unleased federal coal that might be bypassed if it is not included in the tract. This adjacent unleased coal has a high stripping ratio, however, so adding it to the tract as applied for could reduce the average value of the coal resources in the tract. The lands that BLM is considering adding to the tract are:

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

Section 11, Lot 13; 42.34 acres

Section 14, Lots 3 and 4;

82.64 acres

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Section 22, Lots 2 and 16	85.20 acres
Section 27, Lots 6, 7, 10 and 11	166.92 acres
Total:	377.10 acres

The increase to the Horse Creek LBA Tract would be 377.10 acres containing about 35.2 million tons of coal. The reconfiguration results in a tract comprising 3,215.0 acres containing approximately 299.7 millions tons of mineable coal.

2.4 Alternatives Considered but Not Analyzed in Detail

2.4.1 Alternative 3

Under this alternative, as under the Proposed Action and Alternative 2, the BLM would hold a competitive, sealed-bid sale for the lands included in the Horse Creek LBA Tract. Alternative 3 assumes, however, that the successful qualified bidder would be someone other than the applicant and that this bidder would plan to open a new mine to develop the coal resources in the LBA tract.

This alternative is not analyzed in detail in this EIS because it is questionable whether the Horse Creek LBA tract includes enough low cover coal resources to economically justify the expense of a new mine start. It is also unlikely that the tract could be reconfigured to attract bidders interested in opening a new mine because the adjacent unleased coal that could be added to the north and/or west is under deeper cover, making it unattractive to entities evaluating coal tracts for new mine starts as well as to ACC.

A new stand-alone mine would require considerable initial capital expenses, including the construction of new surface facilities (i.e., offices, shops, warehouses, coal processing facilities, coal loadout facilities, and rail spur), extensive baseline data collection, and development of a mining and reclamation plan. A company acquiring this coal would have to compete for customers with established mines in a competitive market that is currently characterized by low prices.

The environmental impacts of developing a new mine to recover the coal resources in the LBA tract would be greater than under the Proposed Action, the No Action Alternative, or Alternative 2 because of the need for new facilities, a new rail line, new employment, and the creation of additional sources of dust. In the event that a lease sale is held and the applicant is not the successful bidder, the successful bidder would be required to submit a detailed mining and reclamation plan for approval before the tract could be mined, and this NEPA analysis would be reviewed and supplemented as necessary prior to approval of that mining and reclamation plan.

2.4.2 Alternative 4

Under Alternative 4, BLM would delay the sale of the Horse Creek LBA Tract until PRB coal prices increase. There are two major sources of revenue to state and federal governments from the leasing and mining of federal coal: 1) the competitive bonus bid paid at the time the coal is leased, and 2) a 12.5 percent royalty collected when

the coal is sold. This alternative could potentially increase the fair market value of the coal resources in the LBA tract, which could increase the bonus bid when the coal is leased. However, the price paid for coal from northeastern Wyoming has decreased by more than \$1.00 per ton since 1992, and an increase in coal prices is unlikely in the foreseeable future. The Clean Air Act Amendments of 1990 include provisions that encourage the use of low sulfur coal. As power plants have switched to PRB coal to meet the new Clean Air Act requirements for lower plant emissions, production of low sulfur PRB coal has increased by more than ten percent annually since 1992, but coal prices have not increased with this increased demand.

The fair market value of the tract and the resulting bonus payment to the government could increase if a lease sale is postponed until PRB coal prices rise, but the postponement would not necessarily lead to higher royalty income to the state or federal governments. Royalty payments are the larger of the two revenue sources. They increase automatically when coal prices increase because they are collected at the time the coal is sold, but they cannot be collected until the coal is leased and permitted and that takes several years. If leasing does not occur until prices rise, then by the time the coal is mined, the higher coal prices may or may not have persisted. If the coal is already leased when prices increase, higher royalty payments will be collected immediately and the coal lessee may be able to negotiate longer term

contracts at higher prices, which would result in longer term, higher royalty payments. On the other hand, if the existing mining operation runs out of coal reserves before prices rise, they may have to shut down their operations before additional coal can be leased and permitted for mining. In that case, the fair market value of the coal may actually drop because the added expense of reopening a mine or starting a new mine would have to be factored into the fair market value.

Other considerations include the value of leaving the mineable coal for future development versus the value of making low-sulfur coal available now, in anticipation of cleaner fuel sources being developed in the future. Continued leasing of PRB coal enables coal-fired power plants to meet Clean Air Act requirements without constructing new plants, revamping existing plants, or switching to existing alternative fuels, which would probably significantly increase power costs for individuals and businesses. If cleaner fuel sources are developed in the future, they could be phased in with less economic impact to the public.

A range of the potential future economic benefits of delaying leasing until coal prices rise could be quantified in an economic analysis, but the benefits would have to be discounted to the present, which would make this alternative less attractive now. The environmental impacts of mining the coal at a later time as part of an existing mine would be expected to be similar and about equal to the Proposed Action or

Alternative 2. If a new mine start is required to mine the coal, the environmental impacts would be expected to be greater than mining it as an extension of an existing mine.

2.5 Comparison of Alternatives

The locations of the Proposed Action and Alternative 2 for the Horse Creek LBA Tract are shown on Figure 2-1. A summary comparison of coal production, surface disturbance, mine life, and projected federal and state revenues for the Proposed Action and Alternatives 1 and 2 for the Horse Creek LBA Tract is presented in Table 2-1.

Table 2-2 presents a comparative summary of the direct and indirect environmental impacts of implementing each alternative as compared to the No-Action Alternative. The No-Action Alternative assumes completion of currently permitted mining at the Antelope Mine for comparison to the Horse Creek LBA Tract. Table 2-3 presents a comparative summary of cumulative environmental impacts of implementing each alternative. The environmental consequences of the Proposed Action and alternatives are analyzed in Chapter 4.0.

These summary impact tables are derived from the following explanation of impacts and magnitude. NEPA requires all agencies of the federal government to include, in every recommendation or report on proposals for legislation and other major federal actions significantly affecting the quality of the human

environment, a detailed statement by the responsible official on:

- (i) the environmental impact of the Proposed Action,
- (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
- (iii) alternatives to the Proposed Action,
- (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
- (v) any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented (42 USC § 4332[C]).

Impacts can be beneficial or adverse, and they can be a primary result of an action (direct) or a secondary result (indirect). They can be permanent, long-term (persisting beyond the end of mine life and reclamation) or short-term (persisting during mining and reclamation and through the time the reclamation bond is released). Impacts also vary in terms of significance. The basis for conclusions regarding significance are the criteria set forth by the Council on Environmental Quality (40 CFR 1508.27) and the professional judgement of the specialists doing the analyses. Impact significance may range from negligible to substantial; impacts can be significant during mining but be reduced to insignificance following completion of reclamation.

Table 2-1. 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.

Table 2-2. Summary Comparison of Magnitude¹ and Duration of Direct and Indirect Impacts for the Proposed Action, Alternative 2, and the No-Action Alternative for the Horse Creek LBA Tract²

<i>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</i>	<i>MAGNITUDE AND DURATION OF IMPACT</i>	
RESOURCE NAME	NO ACTION ALTERNATIVE	PROPOSED ACTION & ALTERNATIVE 2
TOPOGRAPHY & PHYSIOGRAPHY		
PERMANENT TOPOGRAPHIC MODERATION could result in:		
Microhabitat reduction	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Habitat diversity reduction	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Reduction in water runoff and peak flows	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Increased precipitation infiltration	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Wildlife carrying capacity reduction	Moderate, possibly short term on existing mine area	Same as No Action on expanded mine area
Reduction in erosion	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Enhanced vegetative productivity	Moderate, beneficial, long term on existing mine area	Same as No Action on expanded mine area
Potential acceleration of groundwater recharge	Moderate, long term on existing mine area	Same as No Action on expanded mine area
GEOLOGY AND MINERALS		
SUBSURFACE changes would result in:		
Removal of coal	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Removal and replacement of topsoil and overburden	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Physical characteristic alterations in geology	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Loss of coal bed methane	Moderate, permanent on existing mine area	Same as No Action on expanded mine area
SOILS		
CHANGES IN PHYSICAL PROPERTIES would include:		
Increased near-surface bulk density	Moderate, long term on existing mine area	Same as No Action on expanded mine area
More uniformity in soil type, thickness, and texture	Moderate, beneficial, long term on existing mine area	Same as No Action on expanded mine area
Increased uniformity in mixed soils (e.g., texture)	Moderate, beneficial, long term on existing mine area	Same as No Action on expanded mine area
Decreased soil loss due to topographic modification	Moderate, beneficial, long term on existing mine area	Same as No Action on expanded mine area
CHANGES IN CHEMICAL PROPERTIES would include:		
Uniform soil nutrient distribution	Moderate, beneficial, long term on existing mine area	Same as No Action on expanded mine area
CHANGES IN BIOLOGICAL PROPERTIES would include:		
Organic matter reduction	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Microorganism population reduction	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Existing plant habitat reduction in soils stockpiled before placement	Moderate, long term on existing mine area	Same as No Action on expanded mine area

¹ Refer to Section 4.0 and 4.1 for a discussion on magnitude of impacts.

² All impacts are assumed to be adverse unless noted otherwise.

Table 2-2 Continued

DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE	MAGNITUDE AND DURATION OF IMPACT	
RESOURCE NAME	NO ACTION ALTERNATIVE	PROPOSED ACTION & ALTERNATIVE 2
AIR QUALITY		
IMPACTS ASSOCIATED WITH MINING OPERATIONS would include:		
Elevated concentration levels of TSP	Negligible, short term on existing mine area	Same as No Action on expanded mine area
Elevated concentrations of gaseous emissions	Negligible, short term on existing mine area	Moderate short term on expanded mine area
WATER RESOURCES		
<u>SURFACE WATER</u>		
CHANGES IN RUNOFF CHARACTERISTICS AND SEDIMENT DISCHARGE include the following:		
Disruption of surface drainage systems	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Increased runoff and erosion rates	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Increased infiltration	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Reduction in peak flows	Moderate, long term on existing mine area	Same as No Action on expanded mine area
<u>GROUNDWATER</u>		
GROUNDWATER RESOURCE IMPACT would include the following:		
Removal of coal and overburden aquifers	Negligible, short term on existing mine area	Same as No Action on expanded mine area
Replacement of existing coal and overburden with spoil aquifers	Negligible, long term on existing mine area	Same as No Action on expanded mine area
Depressed water levels in aquifers adjacent to mines	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Change in hydraulic properties	Negligible, long term on existing mine area	Same as No Action on expanded mine area
Change in groundwater quality in backfilled areas	Moderate, long term on existing mine area	Same as No Action on expanded mine area
ALLUVIAL VALLEY FLOORS		
While a final determination has not been made by WDEQ/LQD, it is believed that there are no AVF's significant to agriculture on the proposed lease tract	No impact on existing mine area	Same as No Action on expanded mine area
WETLANDS		
Removal of all existing wetlands	Wetlands on existing mine areas would be mined and reclaimed	Same as No Action on expanded mine area
VEGETATION		
PROGRESSIVE REDUCTION IN NATIVE VEGETATION would result in:		
Increased erosion	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Wildlife and livestock habitat loss	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Wildlife habitat carrying capacity loss	Moderate, long term on existing mine area	Same as No Action on expanded mine area

¹ Refer to Section 4.0 and 4.1 for a discussion on magnitude of impacts.

² All impacts are assumed to be adverse unless noted otherwise.

Table 2-2 Continued

DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE	MAGNITUDE AND DURATION OF IMPACT	
RESOURCE NAME	NO ACTION ALTERNATIVE	PROPOSED ACTION & ALTERNATIVE 2
VEGETATION (Continued)		
AFTER RECLAMATION the following could result:		
Changes in surface water networks	Negligible, long term on existing mine area	Same as No Action on expanded mine area
Reduction in vegetation diversity	Negligible, long term on existing mine area	Same as No Action on expanded mine area
Reduction in shrub density	Negligible, long term on existing mine area	Same as No Action on expanded mine area
WILDLIFE		
DURING MINING the following could occur:		
Wildlife displacement	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Pronghorn passage reduction	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Increased mortality rate to small mammals	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Temporary displacement of small mammals	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Sage grouse habitat removal	Negligible, short term on existing mine area	Same as No Action on expanded mine area
Abandonment of raptor nests	Negligible, short term on existing mine area	Same as No Action on expanded mine area
Foraging habitat reduction for raptors	Negligible, short term on existing mine area	Same as No Action on expanded mine area
Loss of nesting and foraging habitat for MBHFI	Negligible, short term on existing mine area	Same as No Action on expanded mine area
Reduction in waterfowl resting and feeding habitat	Negligible, short term on existing mine area	Same as No Action on expanded mine area
Loss of songbird foraging habitat	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Temporary wildlife habitat loss	Negligible, short term on existing mine area	Same as No Action on expanded mine area
Continued road kills by mine-related traffic	Negligible, short term on existing mine area	Same as No Action on expanded mine area
THREATENED, ENDANGERED AND CANDIDATE SPECIES		
MINING IMPACTS could result in the following:		
Loss of black-footed ferret colonies	No impacts on existing mine area	Same as No Action on expanded mine area
Loss of bald eagle nesting and foraging habitat	Negligible, short term on existing mine area	Same as No Action on expanded mine area
Loss of peregrine falcon nesting and foraging habitat	No impact on existing mine area	Same as No Action on expanded mine area
Loss of Ute Ladies-tresses orchid habitat	Negligible on existing mine area	Same as No Action on expanded mine area
Loss of mountain plover habitat	Negligible on existing mine area	Same as No Action on expanded mine area
Loss of swift fox habitat	Negligible on existing mine area	Same as No Action on expanded mine area
LAND USE AND RECREATION		
ENVIRONMENTAL CONSEQUENCES ON LAND USE would be:		
Reduction of livestock grazing	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Loss of wildlife habitat	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Curtailement of oil and gas development	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Loss of public land available for recreation activities	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Loss of coal bed methane reserves	Moderate, permanent on existing mine area	Same as No Action on expanded mine area

¹ Refer to Section 4.0 and 4.1 for a discussion on magnitude of impacts.

² All impacts are assumed to be adverse unless noted otherwise.

Table 2-2 Continued

DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE	MAGNITUDE AND DURATION OF IMPACT	
RESOURCE NAME	NO ACTION ALTERNATIVE	PROPOSED ACTION & ALTERNATIVE 2
CULTURAL RESOURCES 12 sites not eligible or recommended not eligible for NRHP 3 eligible for NRHP/3 pending mitigation	Impacts to eligible or unevaluated sites are not permitted; any site eligible for the NRHP would be avoided or mitigated through data recovery	Same as No Action on expanded mine area Same as No Action on expanded mine area
Possible increase in vandalism Possible increase in unauthorized collecting	No impacts on existing mine area No impacts on existing mine area	Negligible on expanded mine area Negligible on expanded mine area
NATIVE AMERICAN CONCERNS	No impact identified on existing mine area	Same as No Action on expanded mine area
PALEONTOLOGICAL RESOURCES Overburden removal could expose fossils for scientific examination	No impact identified on existing mine area	Same as No Action on expanded mine area
VISUAL RESOURCES EVIDENT IMPACTS DURING MINING include the following: Alteration of landscape classified by the USFS as "common"	Negligible, short term on existing mine area	Same as No Action on expanded mine area
IMPACTS FOLLOWING RECLAMATION could be: Smoother sloped terrain Reduction in sagebrush density	Negligible, long term on existing mine area Negligible, short term on existing mine area	Same as No Action on expanded mine area Same as No Action on expanded mine area
NOISE INCREASED NOISE LEVELS could effect: Nearby occupied dwellings Wildlife in immediate vicinity	Negligible, short term on existing mine area Negligible, short term on existing mine area	Same as No Action on expanded mine area Same as No Action on expanded mine area
TRANSPORTATION FACILITIES Increase in duration that coal is shipped on railroads and employees travel on highways by 8-9 years Relocation of pipelines Relocation of utility lines	No impact on existing mine area No impact on existing mine area No impact on existing mine area	Negligible, short term on expanded mine area Negligible, short term on expanded mine area Same as No Action on expanded mine area

¹ Refer to Section 4.0 and 4.1 for a discussion on magnitude of impacts.

² All impacts are assumed to be adverse unless noted otherwise.

Table 2-2 Continued

DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE	MAGNITUDE AND DURATION OF IMPACT	
	RESOURCE NAME	NO ACTION ALTERNATIVE
SOCIOECONOMICS		
EFFECTS DURING MINING would include:		
Employment Potential (Increase of up to 70 jobs in expanded mine area is expected)	Moderate, beneficial short term on existing mine area	Increased moderate, beneficial, short term on expanded mine area
Revenues from royalties and taxes to the state government	Moderate, beneficial short term on existing mine area	Increased moderate, beneficial, short term on expanded mine area
Revenues from royalties and taxes to the federal government	Moderate, beneficial short term on existing mine area	Increased moderate, beneficial, short term on expanded mine area
Economic development	Moderate, beneficial short term on existing mine area	Increased moderate, beneficial, short term on expanded mine area
Population in Campbell and Converse counties	No impact on existing mine area	Negligible, short term on expanded mine area

¹ Refer to Section 4.0 and 4.1 for a discussion on magnitude of impacts.

² All impacts are assumed to be adverse unless noted otherwise.

Table 2-3. Summary Comparison of Magnitude and Duration of Cumulative Impacts^{1, 2}

DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE	MAGNITUDE TYPE AND DURATION OF IMPACT	
	RESOURCE NAME	PROPOSED ACTION & ALTERNATIVE 2
TOPOGRAPHY & PHYSIOGRAPHY		
REDUCED RELIEF AND SUBDUED TOPOGRAPHY could result in:		
Reduction in topographic diversity	Negligible, long term on existing mine areas	Same as No Action on expanded mine areas
Increased precipitation infiltration	Negligible, long term on existing mine areas	Same as No Action on expanded mine areas
Biodiversity reduction	Negligible, long term on existing mine areas	Same as No Action on expanded mine areas
Big game carrying capacity reduction	Negligible, long term on existing mine areas	Same as No Action on expanded mine areas
GEOLOGY AND MINERALS		
RECOVERY OF COAL would result in:		
Stabilization of municipal, county and state economies	Significant, beneficial, short term on existing mine areas	Same as No Action on expanded mine areas
SOILS		
RECLAIMED SOILS could result in:		
Increased soil productivity	Negligible, long term on existing mine areas	Same as No Action on expanded mine areas
Reduced erosion	Negligible, long term on existing mine areas	Same as No Action on expanded mine areas
AIR QUALITY		
IMPACTS ASSOCIATED WITH MINING OPERATIONS would include:		
Elevated concentration levels of TSP	Negligible, short term on existing mine areas	Same as No Action on expanded mine areas
Elevated concentrations of gaseous emissions	Negligible, short term on existing mine areas	Same as No Action on expanded mine areas
WATER RESOURCES		
<u>SURFACE WATER</u>		
IMPACTS TO SURFACE WATER could result in:		
Temporary reduction in soil infiltration rates and increased runoff	Negligible, short term on existing mine areas	Same as No Action on expanded mine areas
<u>GROUNDWATER</u>		
IMPACTS ON GROUNDWATER could result in:		
Replacing coal and overburden aquifers with spoil aquifers	Negligible, long term on existing mine areas	Same as No Action on expanded mine areas
Drawdown in the coal and shallower aquifers in surrounding areas	Negligible, short term on existing mine areas	Same as No Action on expanded mine areas
Water-level decline in the sub-coal Fort Union Formation	Negligible to moderate, short term on existing mine areas	Same as No Action on expanded mine areas
Change in groundwater quality as a result of mining	Negligible, long term on existing mine areas	Same as No Action on expanded mine areas

¹ Refer to Section 4.5 for a discussion of cumulative impacts.

² All impacts are assumed to be adverse unless noted otherwise.

Table 2-3 Continued

<i>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</i>	<i>MAGNITUDE TYPE AND DURATION OF IMPACT</i>	
RESOURCE NAME	NO ACTION ALTERNATIVE	PROPOSED ACTION & ALTERNATIVE 2
ALLUVIAL VALLEY FLOORS	No cumulative impacts anticipated on existing mine areas	Same as No Action on expanded mine areas
WETLANDS		
Removal of existing wetlands	Wetlands on existing mine areas would be mined and reclaimed	Same as No Action on expanded mine areas
VEGETATION		
SURFACE DISTURBANCE would result in: Loss of common native vegetation types for wildlife	Negligible, short term on existing mine areas	Same as No Action on expanded mine areas
Regional loss of vegetative diversity	Negligible, long term on existing mine areas	Same as No Action on expanded mine areas
WILDLIFE		
IMPACTS ON WILDLIFE FROM SURFACE MINING could result in:		
Loss of pronghorn habitat	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas
Mule deer and white tail deer population reduction	Negligible, short term on existing mine areas	Same as No Action on expanded mine areas
Reduction in raptor nesting sites and foraging habitat	Negligible, short term on existing mine areas	Same as No Action on expanded mine areas
Reduction in sage grouse leks	Negligible, short term on existing mine areas	Same as No Action on expanded mine areas
Loss of nesting and foraging habitat for MBHFI	Negligible, short term on existing mine areas	Same as No Action on expanded mine areas
Reduction in waterfowl habitat	Minor, short term on existing mine areas	Same as No Action on expanded mine areas
Permanent reduction in wildlife habitat diversity	Major, long term on existing mine areas	Same as No Action on expanded mine areas
Permanent reduction in some wildlife carrying capacity	Major, long term on existing mine areas	Same as No Action on expanded mine areas
THREATENED, ENDANGERED AND CANDIDATE SPECIES		
No significant cumulative impacts to T & E species are projected	Negligible, short term on existing mine areas	Same as No Action on expanded mine areas
LAND USE AND RECREATION		
IMPACTS ON LAND USE could result in:		
Loss of agricultural production	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas
Disruption of oil and gas development/production	Moderate to significant, short term on existing mine areas	Same as No Action on expanded mine areas
Reduction of wildlife habitat	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas
IMPACTS ON RECREATION could result in:		
Loss of access to public lands used by recreationists, particularly hunting	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas

¹ Refer to Section 4.5 for a discussion of cumulative impacts.² All impacts are assumed to be adverse unless noted otherwise.

Table 2-3 Continued

DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE	MAGNITUDE TYPE AND DURATION OF IMPACT	
RESOURCE NAME	NO ACTION ALTERNATIVE	PROPOSED ACTION & ALTERNATIVE 2
CULTURAL RESOURCES	Sites eligible for NRHP would be mitigated on existing mine areas	Same as No Action on expanded mine areas
NATIVE AMERICAN CONCERNS	No impact identified on existing mine areas	Same as No Action on expanded mine areas
PALEONTOLOGICAL RESOURCES	No impact identified on existing mine areas	Same as No Action on expanded mine areas
VISUAL RESOURCES Impacts on visual resources by mining activities	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas
NOISE	No impact anticipated outside of existing mine areas	Same as No Action outside expanded mine areas
TRANSPORTATION FACILITIES Continued use of existing transportation facilities	Negligible, short term on existing mine area	Same as No Action on expanded mine areas
SOCIOECONOMICS IMPACTS ON SOCIOECONOMICS could include:		
Mineral and energy related development	Moderate, beneficial, short term on existing mine areas	Same as No Action on expanded mine areas
Employment	Significant, beneficial, short term on existing mine areas	Same as No Action on expanded mine areas
Housing market	Significant, short term due to existing mines	Same as No Action on expanded mine areas
Economic development	Significant, beneficial, short term due to existing mine areas	Same as No Action on expanded mine areas
Revenues and royalties	Significant, beneficial, short term due to existing mine areas	Same as No Action on expanded mine areas

¹ Refer to Section 4.5 for a discussion of cumulative impacts.
² All impacts are assumed to be adverse unless noted otherwise.