

## 2.0 PROPOSED ACTION AND ALTERNATIVES

This chapter describes the Proposed Action and alternatives to this action for each of the five LBA<sup>1</sup> tracts being evaluated in this EIS. The five LBA tracts are the NARO North and NARO South LBA Tracts as applied for by PRCC, the Little Thunder LBA Tract as applied for by ALC, the West Roundup LBA Tract as applied for by TCC, and the West Antelope LBA Tract as applied for by ACC. For each tract, the Proposed Action is to hold a separate competitive lease sale and issue a separate lease for the federal coal lands included in the tract. The No Action Alternative (Alternative 1) for each tract is to reject the lease application for that tract and not offer that tract for competitive sale at this time. Alternatives 2 and 3 evaluate alternate tract configurations considered by BLM. Under Alternatives 2 and 3, separate competitive sales would be held and leases issued for federal coal lands included in one or more of the five LBA tracts as modified by the BLM.

Other alternatives considered but not analyzed in detail include:

- holding a competitive lease sale and issuing a lease for federal coal lands included in one or more of the five LBA tracts (as applied for or as modified by BLM), with the assumption that one or more of the tracts

would be developed as a new mine (Alternative 4); and

- delaying the sale of one or more of the five LBA tracts as applied for to wait for possible higher coal prices and/or to allow recovery of the CBM resources in the tract prior to mining (Alternative 5). Under this alternative, it is assumed that one or more of the five LBA tracts could be developed later as a maintenance tract or a new start mine, depending on how long the sale was delayed.

Under each Proposed Action, a tract would be offered for lease as applied for at a separate, sealed-bid, competitive lease sale, subject to standard and special lease stipulations developed for the PRB and that tract. The boundaries of each tract would be consistent with the tract configuration proposed by each applicant. For each tract, the Proposed Action assumes that the applicant for that tract would be the successful bidder on that tract and that each tract would be mined as a maintenance lease for an existing mine.

The No Action Alternative for each tract assumes that the application for that tract would be rejected, the tract would not be offered for competitive sale, and the coal contained within the tract would not be mined as proposed. Rejection of an application would not affect currently permitted mining activities on existing leases at any of the existing mines and selection of the No Action Alternative

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

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would not preclude an application to lease any rejected tract in the future. Portions of the surface of each of the LBA tracts would probably be disturbed due to overstripping to allow coal to be removed from the adjacent, existing leases.

In evaluating these lease applications, BLM identified a study area for each tract that includes adjacent unleased federal coal as well as the tract as applied for. In determining a preferred tract configuration for each tract, BLM evaluated both adding and subtracting coal from the tract as applied for in order to maintain or increase the potential for competition for that tract and to prevent potential future bypass of federal coal resources. BLM's preferred tract delineation for each tract is considered to be BLM's Preferred Alternative for that tract in this Final EIS. The alternate tract configurations BLM considered are described under Alternatives 2 and 3 for each tract. No alternate tract configurations were identified for the NARO North LBA Tract, so BLM's Preferred Alternative for the NARO North LBA Tract is the tract that was applied for. For each of the other four LBA tracts considered in this EIS, BLM's Preferred Alternative either adds or subtracts coal from the tract that was applied for.

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 a tract is offered for lease, the applicant

for that tract may or may not be the high bidder when the lease sale is held.

For each tract, if a decision is made to hold a separate 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 that tract. As discussed in Section 1.2, each mining and reclamation plan would undergo detailed review by state and federal agencies as part of the approval process. Those plans could potentially differ from the plans used to analyze the impacts of the Proposed Action and Alternatives 2 and 3, which are the Action Alternatives 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 tracts but major factors like tons of coal mined, yards of overburden removed, acres disturbed, etc. would not be significantly different from the plans used in this analysis.

An estimate of the coal included in each tract provided by the applicant is given in the following descriptions of the Proposed Action and Action Alternatives for each tract. BLM will independently evaluate the volume and average quality of the coal resources included in each tract offered for sale as part of the fair market value determination process. BLM's estimate of the mineable federal coal reserves and average quality of the coal included in each

tract will be published in the sale notice for each tract that is offered for sale. Some general coal quality information in the area of the LBA tracts considered in this EIS is included in Section 3.3 of this document.

Under the Proposed Action and the Action Alternatives for each tract, it is assumed that an area larger than the tract would have to be disturbed in order to recover all of the coal in that tract. The disturbances outside the coal removal area would be due to activities like overstripping, matching undisturbed topography, and construction of flood control and sediment control structures.

#### Hazardous and Solid Waste

Under all of the Proposed Actions and Action Alternatives, the procedures and requirements for handling of hazardous and solid wastes would be the same as the procedures and requirements for the existing mining operations. Solid waste that is produced at the existing North Antelope/Rochelle Complex, Black Thunder, North Rochelle, and Antelope Mines consists of floor sweepings, shop rags, lubricant containers, welding rod ends, metal shavings, worn tires, packing material, used filters, and office and food wastes. North Antelope/Rochelle Complex, Black Thunder, North Rochelle, and Antelope Mines dispose of a portion of their solid wastes within their permit boundaries in accordance with WDEQ-approved solid waste disposal plans. Solid waste is also disposed of at the

Campbell County landfill. Sewage 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 all four mines.

Major lubrication, oil changes, etc., of most equipment are performed inside the service building lube bays at the North Antelope/Rochelle Complex, Black Thunder, North Rochelle, and Antelope Mines, where used oil is currently contained and deposited in storage tanks. All of the collected used oils are then recycled off site. These practices would not change if the applicants acquire these LBA tracts.

PRCC, TBCC, TCC, and ACC have 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 their mining operations. PRCC, TBCC, TCC, and ACC maintain files containing Material Safety Data Sheets for all chemicals, compounds, and/or substances which are or would be used during the course of mining.

PRCC, TBCC, TCC, and ACC are 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

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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.

PRCC, TBCC, TCC, and 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, WDEQ Water Quality 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;
- Stormwater Pollution Prevention Plans;
- Inventories of Hazardous Chemical Categories Pursuant to Section 313 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, Department of Transportation, 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 the North Antelope/Rochelle Complex, Black Thunder, North Rochelle, and Antelope Mines. Acquisition of the LBA tracts by the applicants would not change these current practices nor the type of any wastes generated or disposed at the mines, although quantities of some wastes would increase in proportion to anticipated increases in coal production (e.g., fuel, lubricants, and shop and office wastes).

**2.1 Proposed Action and Alternatives for the NARO North LBA Tract**

2.1.1 NARO North LBA Tract Proposed Action (Preferred Alternative)

PRCC has applied for two separate LBA tracts (NARO North and NARO South). Each tract will be evaluated separately and if a decision is made to lease both of these tracts, a separate competitive lease sale will be held for each tract.

Under the Proposed Action for the NARO North LBA Tract, the tract as applied for by PRCC would be offered for lease at a separate, sealed-bid, competitive lease 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 configuration proposed in the NARO North LBA Tract lease application (Figure 2-1). The Proposed Action assumes that PRCC will be the successful bidder on the NARO North LBA Tract if it is offered for sale. The Proposed Action is the Preferred Alternative of the BLM for the NARO North LBA Tract.

The legal description of the proposed NARO North LBA Tract coal lease lands as applied for by PRCC under the Proposed Action is as follows:

T.42N., R.70W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 28: Lots 5 through 16;  
495.59 acres

Section 29: Lots 5 through 16;  
495.89 acres  
Section 30: Lots 9 through 20;  
443.67 acres

T.42N., R.71W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 25: Lots 5 through 15;  
447.19 acres  
Section 26: Lots 7 through 10;  
162.22 acres  
Section 35: Lots 1, 2, 7 through 10,  
15 and 16;  
324.82 acres

Total: 2,369.38 acres

Land descriptions and acreage are based on the BLM Status of Public Domain Land and Mineral Titles approved Coal Plats as of February 12, 2003 and May 13, 2003.

As indicated in Chapter 1, Section 1.4 and Appendix B, no lands in the NARO North LBA Tract were found to be unsuitable for mining. The NARO North tract as applied for includes approximately 2,369.38 mineable acres. PRCC estimates that the NARO North tract includes approximately 323 million tons of in-place coal reserves. Assuming a recovery factor of 95 percent, PRCC estimates that about 306.9 million tons of coal would be recovered from the NARO North LBA Tract as applied for.

BLM will independently evaluate the volume and average quality of the coal resources included in the NARO North LBA Tract as part of the fair market value determination process.

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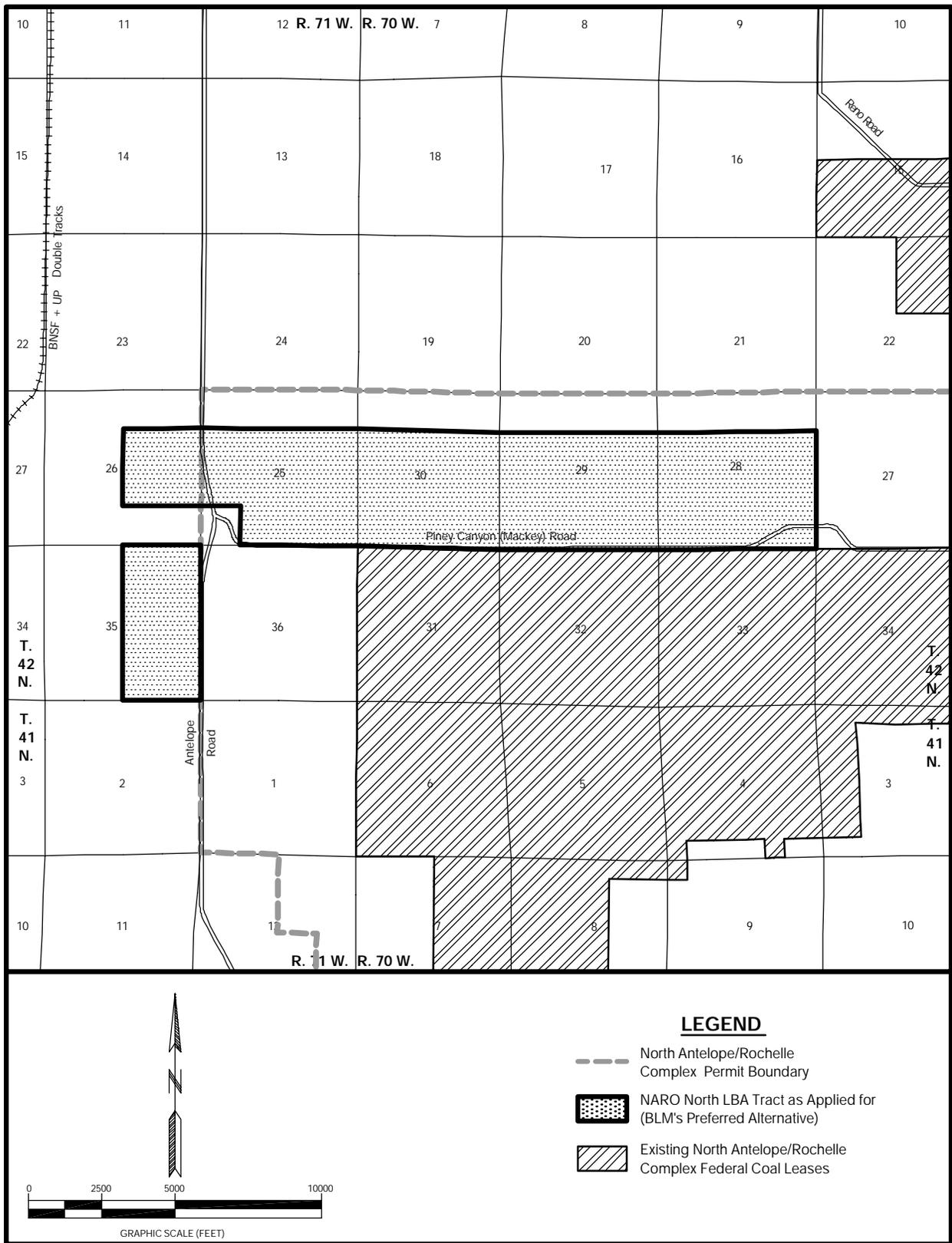


Figure 2-1. NARO North LBA Tract Configuration.

BLM's estimate of the mineable reserves and average quality of the coal included in the tracts will be published in the sale notice if the tract is offered for sale. Some coal quality information in the area of the NARO North LBA Tract is included in Section 3.3 of this document.

The approved North Antelope/Rochelle Complex Permit 569 Term T5 includes monitoring and mitigation measures for the North Antelope/Rochelle Complex that are required by SMCRA and Wyoming State Law. If the NARO North LBA Tract is acquired by PRCC, these monitoring and mitigation measures would be extended to cover operations on the NARO North LBA Tract when the coal mining permit is amended to include the tract. This amended permit would have to be approved before mining operations could take place on the tract. These monitoring and mitigation measures are considered to be part of the Proposed Action and other Action Alternatives during the leasing process because they are regulatory requirements.

The NARO North LBA Tract would be mined as an integral part of the North Antelope/Rochelle Complex under the Proposed Action. The North Antelope/Rochelle Complex is already operating under both an approved state mining permit and MLA mining plan. Both the approved state mining permit and MLA mining plan would require amendment to include the LBA tract. Since the NARO North LBA Tract would be an extension of the existing North Antelope/Rochelle

Complex, the facilities and infrastructure would be the same as those identified in the WDEQ/LQD Mine Permit 569 Term T5 approved December 1, 1999 and the BLM Resource Recovery and Protection Plan approved July 23, 2001 for the North Antelope/Rochelle Complex.

PRCC-s currently approved air quality permit from the WDEQ/AQD allows up to 105 million tons of coal per year to be mined in years 2004 through 2006. The North Antelope/Rochelle Complex produced 68.9 million tons of coal in 1999, 70.8 million tons of coal in 2000, 74.8 million tons of coal in 2001, and 74.8 million tons of coal in 2002 (Wyoming State Inspector of Mines 1999, 2000, 2001, and 2002). Under the No Action Alternative, the North Antelope/Rochelle Complex would mine its remaining 877 million tons of in-place coal reserves in approximately 11 years at an average production rate of 75 mmtpy (the projected production rate ranges between 8.7 mmtpy to 105 mmtpy). Under the Proposed Action, PRCC estimates that average annual coal production would be 90 million tons (the projected production rate ranges between 26 mmtpy to 105 mmtpy), and the life of the mine would be extended by approximately five years.

If PRCC acquires both the NARO North and NARO South LBA Tracts as applied for, they estimate that a total of 1,340 million tons of coal would be mined after January 1, 2003, with an estimated 506.9 million tons coming from the two LBA tracts. As of December 31, 2002, 718 million tons of coal had been mined from within

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the current permitted area of the mine.

Topsoil removal with heavy 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 would be used to haul and distribute the stockpiled topsoil.

The North Antelope/Rochelle Complex is one of several mines currently operating in the PRB where the coal seams are notably thick and the overburden is relatively thin. Mining would be conducted in semi-independent pits. Overburden removal has been and would continue to be conducted using trucks and shovels, draglines, and/or direct cast blasting. Most overburden and all coal would be drilled and blasted to facilitate efficient excavation. The design of the North Antelope/Rochelle Complex seeks to confine disturbance to the active mine blocks. As overburden is removed, most would be directly placed into areas where coal has already been removed. Once the overburden has been replaced it is sampled and verified to be suitable overburden material, then graded to approximate final contour, ripped and finally topsoiled. If necessary, material that is found to be unsuitable would be adequately covered with suitable overburden material prior to grading and topsoiling. Elevations consistent with an approved PMT plan would be

established as quickly as possible. Under certain conditions, the PMT may not be immediately achievable. This occurs when there is an excess of material that 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. Once a seedbed has been formed, vegetation would be reestablished that is consistent with the postmining land use.

Coal would be produced from two seams (Wyodak-Anderson 1 and Wyodak-Anderson 2) that total 60 to 80 ft thick 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. Coal would be loaded with electric-powered shovels into off-highway haul trucks for transport to crushing facilities. Coal haul roads would be temporary structures built within the mine areas. Mining efficiency and air quality protection are and would continue to be facilitated by extensive use of near-pit crushers and overland conveyors. There are three existing crushing facilities within the existing permit area. All transfer points on conveyor belts and the truck dump hopper at the processing plant are controlled by baghouse-type dust collectors, PECs, fogger/spray systems, or stilling sheds. There are five existing storage silos, each with a covered storage slot. While sufficient capacity exists,

future changes in facilities may be constructed to improve operating efficiency and air quality protection. An additional near-pit crusher/conveyor, railroad loop, and two silos are planned whether or not PRCC acquires the NARO North or NARO South LBA Tracts. PRCC's currently approved air quality permit from the WDEQ/AQD allows a maximum of 105 million tons of coal per year to be mined provided additional coal handling and processing facilities are constructed. The fourth crushing facility and two additional storage silos have been permitted for construction.

Current full-time employment at the North Antelope/Rochelle Complex is approximately 820 but PRCC anticipates that employment will increase to 1,175 under the No Action Alternative. If both the NARO North and NARO South LBA Tracts are acquired, PRCC anticipates that the average annual coal production would be approximately 90 million tons, the maximum annual coal production would be 105 million tons, and employment would be 1,185 persons at the maximum annual production rate of 105 million tons.

#### 2.1.2 NARO North LBA Tract Alternative 1

Under the NARO North LBA Tract Alternative 1, the No Action Alternative, the application to lease the coal included in the NARO North LBA Tract would be rejected, the tract would not be offered for competitive sale, and the coal included in the tract would not be mined. This would

not affect permitted mining activities and employment on the existing leases at the North Antelope/Rochelle Complex and would not preclude an application to lease the coal included in the NARO North LBA Tract in the future. Portions of the surface of the NARO North LBA Tract could be disturbed due to overstripping to allow coal to be removed from the adjacent existing leases.

Approximately 14,895.5 acres of federal coal are currently leased at the North Antelope/Rochelle Complex and a total of about 20,410 acres of land will be affected in mining the current leases. If the NARO North and NARO South LBA Tracts are not leased, PRCC estimates that the average annual production at the North Antelope/Rochelle Complex after 2002 will be 75 million tons, annual projected production ranges from 8.7 million tons to 105 million tons, and employment will be approximately 1,175 persons at the maximum production rate.

In order to compare the economic and environmental consequences of mining these lands versus not mining them, this EIS was prepared under the assumption that an LBA tract would not be mined in the foreseeable future if the No Action Alternative for that tract is selected. However, selection of the NARO North No Action Alternative would not preclude leasing and mining of the tract in the future, either as a maintenance tract for an existing mining operation or as a new start mine.

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### **2.2 Proposed Action and Alternatives for the NARO South LBA Tract**

#### 2.2.1 NARO South LBA Tract Proposed Action

PRCC has applied for two separate LBA tracts (NARO North and NARO South). Each tract will be evaluated separately and, if a decision is made to lease both of these tracts, a separate competitive lease sale will be held for each tract.

Under the Proposed Action for the NARO South LBA Tract, the tract as applied for by PRCC would be offered for lease at a separate, sealed-bid, competitive lease 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 configuration proposed in the NARO South LBA Tract lease application (Figure 2-2a). The Proposed Action assumes that PRCC will be the successful bidder on the NARO South LBA Tract if it is offered for sale.

The legal description of the proposed NARO South LBA Tract coal lease lands as applied for by PRCC under the Proposed Action is as follows:

T.41N., R.70W., 6<sup>th</sup> P.M., Campbell and Converse Counties, Wyoming

Section 19: Lots 6 through 11, 12(S½), 13 through 20;  
584.555 acres

Section 20: Lots 5(S½), 6(S½), 7(S½), 8(S½), 9 through 16;

402.645 acres

Section 21: Lots 5(S½), 12, and 13;

99.695 acres

Section 28: Lots 3 through 6, 11, and NE¼ SW¼;

238.62 acres

Section 29: Lots 1 through 12;

484.08 acres

Section 30: Lots 5 through 12;

324.04 acres

Total: 2,133.635 acres

Land descriptions and acreage are based on the BLM Status of Public Domain Land and Mineral Titles approved Coal Plats as of May 13, 2003.

As indicated in Chapter 1, Section 1.4 and Appendix B, some of the above-described lands in the NARO South LBA Tract are unsuitable for mining due to the presence of the BNSF & UP railroad ROW and partially burned areas where the coal is not recoverable. Although these lands would not be mined, they are included in the tract to allow maximum recovery of all the mineable coal outside of the railroad ROW and associated buffer zones and the partially burned areas, and to comply with the coal leasing regulations, which do not allow leasing of less than 10-acre aliquot parts. The NARO South tract as applied for includes approximately 2,133.635 mineable acres. PRCC estimates that it includes approximately 241 million tons of in-place coal and that about 200 million tons of that coal would be recoverable. An average recovery

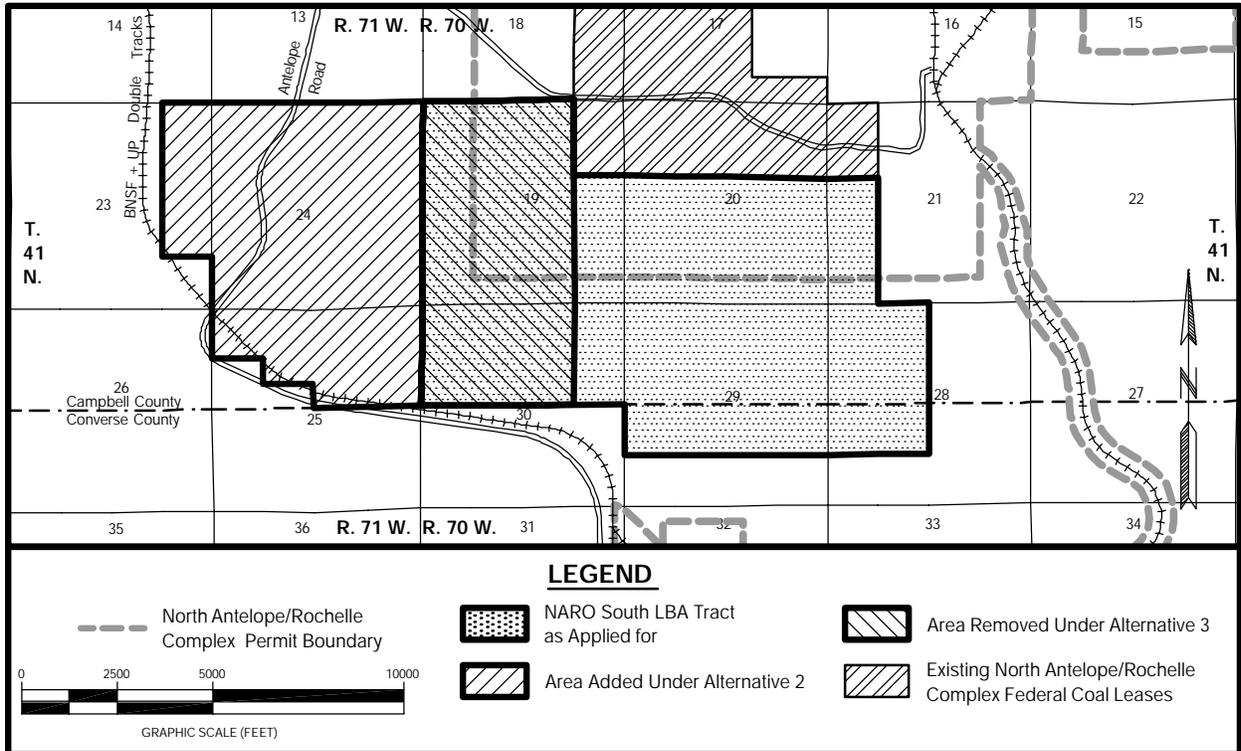


Figure 2-2a. NARO South LBA Alternative Tract Configurations.

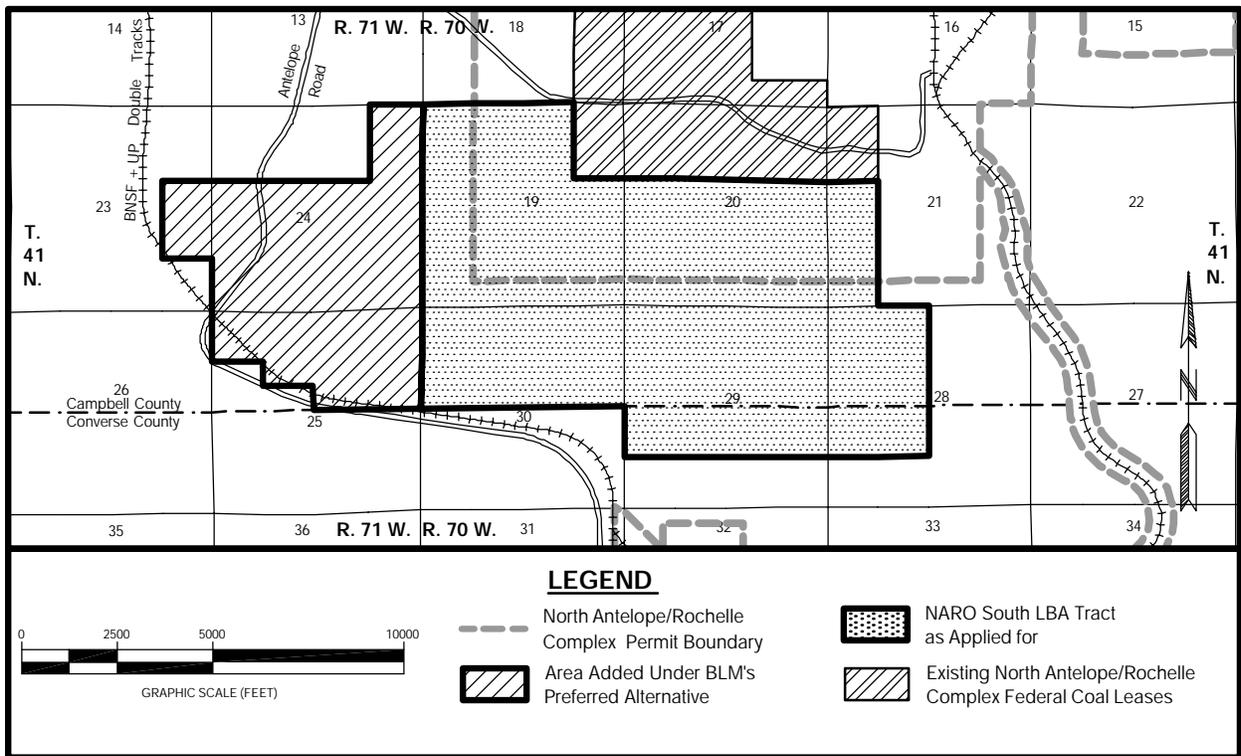


Figure 2-2b. NARO South LBA Preferred Alternative Tract Configuration.

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factor of approximately 83 percent is therefore assumed, based largely upon PRCC's estimate of the unmineable reserves within the ROW and unrecoverable coal in partially burned areas.

BLM will independently evaluate the volume and average quality of the coal resources included in the NARO South LBA Tract as part of the fair market value determination process. The fact that the coal within the ROW and partially burned area cannot all be recovered will be considered by BLM in the fair market value determination for the LBA tract. BLM's estimate of the mineable reserves and average quality of the coal included in the tracts will be published in the sale notice if the tract is offered for sale. Some coal quality information in the area of the NARO South LBA Tract is included in Section 3.3 of this document.

The approved North Antelope/Rochelle Complex Permit 569 Term T5 includes monitoring and mitigation measures for the North Antelope/Rochelle Complex that are required by SMCRA and Wyoming State Law. If the NARO South LBA Tract is acquired by PRCC, these monitoring and mitigation measures would be extended to cover operations on the NARO South LBA Tract when the coal mining permit is amended to include the tract. This amended permit would have to be approved before mining operations could take place on the tract. These monitoring and mitigation measures are considered to be part of the Proposed Action and other Action

Alternatives during the leasing process because they are regulatory requirements.

The NARO South LBA Tract would be mined as an integral part of the North Antelope/Rochelle Complex under the Proposed Action. The North Antelope/Rochelle Complex is already operating under both an approved state mining permit and MLA mining plan. Both the approved state mining permit and MLA mining plan would require amendment to include the LBA tract. Since the NARO South LBA Tract would be an extension of the existing North Antelope/Rochelle Complex, the facilities and infrastructure would be the same as those identified in the WDEQ/LQD Mine Permit 569 Term T5 approved December 1, 1999 and the BLM Resource Recovery and Protection Plan approved July 23, 2001 for the North Antelope/Rochelle Complex.

PRCC's currently approved air quality permit from the WDEQ/AQD allows up to 105 million tons of coal per year to be mined in years 2004 through 2006. The North Antelope/Rochelle Complex produced 68.9 million tons of coal in 1999, 70.8 million tons of coal in 2000, 74.8 million tons of coal in 2001, and 74.8 million tons of coal in 2002 (Wyoming State Inspector of Mines 1999, 2000, 2001, and 2002). Under the No Action Alternative, the North Antelope/Rochelle Complex would mine its remaining 877 million tons of in-place coal reserves in approximately 11 years at an average production rate of 75 mmtpy (the projected production rate ranges between 8.7 mmtpy to 105 mmtpy).

Under the Proposed Action, PRCC estimates that average annual coal production would be 90 million tons (the projected production rate ranges between 26 mmtpy to 105 mmtpy), and the life of the mine would be extended by approximately five years.

If PRCC acquires both the NARO North and NARO South LBA Tracts as applied for, they estimate that a total of 1,340 million tons of coal would be mined after January 1, 2003, with an estimated 506.9 million tons coming from the two LBA tracts. As of December 31, 2002, 718 million tons of coal had been mined from within the current permitted area of the mine.

Topsoil removal with heavy 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 would be used to haul and distribute the stockpiled topsoil.

The North Antelope/Rochelle Complex is one of several mines currently operating in the PRB where the coal seams are notably thick and the overburden is relatively thin. Mining would be conducted in semi-independent pits. Overburden removal has been and would continue to be conducted using trucks and shovels, draglines, and/or direct cast blasting. Most overburden and all coal would be drilled and blasted to facilitate efficient excavation. The

design of the North Antelope/Rochelle Complex seeks to confine disturbance to the active mine blocks. As overburden is removed, most would be directly placed into areas where coal has already been removed. Once the overburden has been replaced it is sampled and verified to be suitable overburden material, then graded to approximate final contour, ripped and finally topsoiled. If necessary, material that is found to be unsuitable would be adequately covered with suitable overburden material prior to grading and topsoiling. Elevations consistent with an approved PMT plan would be established as quickly as possible. Under certain conditions, the PMT may not be immediately achievable. This occurs when there is an excess of material that 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. Once a seedbed has been formed, vegetation would be reestablished that is consistent with the postmining land use.

Coal would be produced from two seams (Wyodak-Anderson 1 and Wyodak-Anderson 2) that total 60 to 80 ft thick 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. Coal would be loaded with electric-powered shovels into off-highway haul trucks for transport to

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crushing facilities. Coal haul roads would be temporary structures built within the mine areas. Mining efficiency and air quality protection are and would continue to be facilitated by extensive use of near-pit crushers and overland conveyors. There are three existing crushing facilities within the existing permit area. All transfer points on conveyor belts and the truck dump hopper at the processing plant are controlled by baghouse-type dust collectors, PECs, fogger/spray systems, or stilling sheds. There are five existing storage silos, each with a covered storage slot. While sufficient capacity exists, future changes in facilities may be constructed to improve operating efficiency and air quality protection. An additional near-pit crusher/conveyor, railroad loop, and two silos are planned whether or not PRCC acquires the NARO North or NARO South LBA Tracts. PRCC's currently approved air quality permit from the WDEQ/AQD allows a maximum of 105 million tons of coal per year to be mined provided additional coal handling and processing facilities are constructed. The fourth crushing facility and two additional storage silos have been permitted for construction.

Current full-time employment at the North Antelope/Rochelle Complex is approximately 820 but PRCC anticipates that employment will increase to 1,175 under the No Action Alternative. If both the NARO North and NARO South LBA Tracts are acquired, PRCC anticipates that the average annual coal production would be approximately 90 million tons, the

maximum annual coal production would be 105 million tons, and employment would be 1,185 persons at the maximum annual production rate of 105 million tons.

The NARO South LBA Tract was applied for by PRCC, but it is also located adjacent to the Antelope Mine, operated by ACC. ACC may also be in a position to mine the NARO South LBA Tract under the Proposed Action or Alternative 2 as a maintenance lease. If ACC acquires the tract, the rate of coal production, mining sequence, equipment, and facilities would be different than if PRCC acquired the tract as a maintenance lease, as described above. However, the area of disturbance and the impacts of removing the coal would not be substantially different from the area of disturbance and the impacts of PRCC mining the tract.

### 2.2.2 NARO South LBA Tract Alternative 1

Under the NARO South LBA Tract Alternative 1, the No Action Alternative, the application to lease the coal included in the NARO South LBA Tract would be rejected, the tract would not be offered for competitive sale, and the coal included in the tract would not be mined. This would not affect permitted mining activities and employment on the existing leases at the North Antelope/Rochelle Complex and would not preclude an application to lease the coal included in the NARO South LBA Tract in the future. Portions of the surface of the NARO South LBA Tract could be disturbed due to overstripping to

allow coal to be removed from the adjacent existing leases.

Approximately 14,895.5 acres of federal coal are currently leased at the North Antelope/Rochelle Complex and a total of about 20,410 acres of land will be affected in mining the current leases. If the NARO North and NARO South LBA Tracts are not leased, PRCC estimates that the average annual production at the North Antelope/Rochelle Complex after 2002 will be 75 million tons, annual projected production ranges from 8.7 million tons to 105 million tons, and employment will be approximately 1,175 persons at the maximum production rate.

In order to compare the economic and environmental consequences of mining these lands versus not mining them, this EIS was prepared under the assumption that an LBA tract would not be mined in the foreseeable future if the No Action Alternative for that tract is selected. However, selection of the NARO South No Action Alternative would not preclude leasing and mining of the tract in the future, either as a maintenance tract for an existing mining operation or as a new start mine.

### 2.2.3 NARO South LBA Tract Alternative 2 (Preferred Alternative)

Under Alternative 2 for the NARO South LBA Tract, BLM would reconfigure the tract and hold a competitive coal sale for the lands included in the reconfigured tract and issue a lease to the successful bidder. The modified tract would be subject

to standard and special lease stipulations developed for the PRB and this tract if it is offered for sale (Appendix D). Alternative 2 for the NARO South LBA Tract assumes that PRCC would be the successful bidder on the tract if a lease sale is held and that the tract would be mined as a maintenance lease for the North Antelope/Rochelle Complex. Other assumptions are the same as for the Proposed Action.

In evaluating the NARO South coal lease application, BLM identified a study area, shown in Figure 2-2a as the “area added under Alternative 2”, that included unleased federal coal adjacent to the tract as applied for that BLM could add to the tract to potentially increase competitive interest in the tract and/or to reduce the potential that some of the remaining unleased federal coal in this area would be bypassed in the future. Under Alternative 2 for the NARO South LBA Tract, the lands that BLM considered adding lie between the western edge of the tract as applied for and the BNSF & UP railroad ROW. This study area includes approximately 1,068 acres containing approximately 146 million tons of mineable coal. The BLM’s Preferred Alternative for the NARO South LBA Tract is to add a portion of the Alternative 2 study area to the tract as applied for, as shown in Figure 2-2b. Under the Preferred Alternative, the BLM would add the followings lands to the NARO South LBA Tract as applied for:

## 2.0 Proposed Action and Alternatives

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### T.41N., R.71W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 23: Lots 8(S½) and 9;  
61.075 acres

Section 24: Lots 1, 5(S½), 6(S½),  
7(S½), 8 through 16;  
493.375 acres

Section 25: Lots 1 through 4, 9, 10,  
and 12(N½);  
268.640 acres

Total: 823.090 acres

Land descriptions and acreage are based on the BLM Status of Public Domain Land and Mineral Titles approved Coal Plats as of December 4, 2001.

PRCC estimates that these 823.09 acres contain approximately 104.1 million tons of mineable coal.

The legal description of the NARO South LBA Tract under the BLM's Preferred Alternative is as follows:

### T.41N., R.70W., 6<sup>th</sup> P.M., Campbell and Converse Counties, Wyoming

Section 19: Lots 6 through 11,  
12(S½), 13 through 20;  
584.555 acres

Section 20: Lots 5(S½), 6(S½), 7(S½),  
8(S½), 9 through 16;  
402.645 acres

Section 21: Lots 5(S½), 12, and 13;  
99.695 acres

Section 28: Lots 3 through 6, 11, and  
NE¼ SW¼;  
238.620 acres

Section 29: Lots 1 through 12;  
484.080 acres

Section 30: Lots 5 through 12;  
324.040 acres

### T.41N., R.71W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 23: Lots 8(S½), and 9;  
61.075 acres

Section 24: Lots 1, 5(S½), 6(S½),  
7(S½), 8 through 16;  
493.375 acres

Section 25: Lots 1 through 4, 9, 10,  
and 12(N½);  
268.640 acres

Total: 2,956.725 acres

PRCC estimates that the reconfigured tract includes approximately 345 million tons of in-place coal. Using PRCC's projected recovery factor of 78 percent, the reconfigured tract would contain about 270 million tons of recoverable coal. PRCC estimates that the average recovery factor for this reconfigured tract would be 78 percent because portions of the 823.09 acres added in this alternative lie within the BNSF & UP railroad ROW and are therefore unsuitable for mining according to the coal leasing unsuitability criteria (43 CFR 3461). Although the coal included in these lands could not be mined, these lands have been included in this alternative tract configuration to allow maximum 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.

BLM will independently evaluate the volume and average quality of the coal resources included in each tract

offered for sale as part of the fair market value determination process. The fact that the coal within the ROW and partially burned area cannot all be recovered will be considered by BLM in the fair market value determination for the LBA tract. BLM's estimate of the recoverable federal coal reserves and average quality of the coal included in each tract will be published in the sale notice for each tract that is offered for sale. Some general coal quality information in the area of the LBA tracts considered in this EIS is included in Section 3.3 of this document.

2.2.4 NARO South LBA Tract Alternative 3

Under Alternative 3 for the NARO South LBA Tract, BLM is considering a different tract configuration. As under Alternative 2, if this tract configuration is selected BLM would hold a competitive coal sale and issue a lease to the successful bidder. The modified tract would be subject to standard and special lease stipulations developed for the PRB and this tract if it is offered for sale (Appendix D). Alternative 3 for the NARO South LBA Tract assumes that PRCC would be the successful bidder on the tract if a lease sale is held and that the tract would be mined as a maintenance lease for the North Antelope/Rochelle Complex. Other assumptions would be the same as for the Proposed Action.

Under this alternative for the NARO South LBA Tract, BLM would remove some of the lands applied for in the

western portion of the tract from consideration for leasing at this time and offer a smaller tract for competitive sale (Figure 2-2a). The coal that BLM is considering removing from the tract as applied for could be combined with the unleased federal coal between the reconfigured NARO South LBA Tract and the BNSF & UP railroad ROW to create a tract which would potentially have more competitive interest if it is leased in the future. The lands that BLM would remove from the tract are:

T.41N., R.70W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 19: Lots 6 through 11 and 14 through 19;

483.74 acres

Section 30: Lots 6 through 11;

243.01 acres

Total:

726.75 acres

PRCC estimates that these 726.75 acres contain approximately 99.7 million tons of mineable coal. The Alternative 3 reconfiguration of the NARO South LBA Tract, therefore, results in a tract comprising approximately 1,406.89 mineable acres. PRCC estimates that the reconfigured tract includes approximately 141.4 million tons of in-place coal and that about 128 million tons of that coal would be recoverable. PRCC estimates that the average recovery factor for this reconfigured tract would be 91 percent because these 726.75 acres include lands unsuitable for mining due to the presence of partially

## 2.0 Proposed Action and Alternatives

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burned areas where the coal is not recoverable.

BLM will independently evaluate the volume and average quality of the coal resources included in each tract offered for sale as part of the fair market value determination process. The fact that the coal within the partially burned area cannot all be recovered will be considered by BLM in the fair market value determination for the LBA tract. BLM's estimate of the mineable federal coal reserves and average quality of the coal included in each tract will be published in the sale notice for each tract that is offered for sale. Some general coal quality information in the area of the LBA tracts considered in this EIS is included in Section 3.3 of this document.

### **2.3 Proposed Action and Alternatives for the Little Thunder LBA Tract**

#### 2.3.1 Little Thunder LBA Tract Proposed Action

Under the Proposed Action for the Little Thunder LBA Tract, the tract as applied for by ALC would be offered for lease at a separate, sealed-bid, competitive lease sale, subject to standard and special lease stipulations developed for the PRB and this tract (Appendix D). The boundaries of the tract would be consistent with the tract configuration proposed in the Little Thunder LBA Tract lease application (Figure 2-3). The Proposed Action assumes that ALC will be the successful bidder on the Little

Thunder LBA Tract if it is offered for sale.

The legal description of the proposed Little Thunder LBA Tract coal lease lands as applied for by ALC under the Proposed Action is as follows:

#### T.43N., R.71W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 2: Lots 5, 6, 11 through 14, 19 and 20;

320.93 acres

Section 11: Lots 1, 2, 7 through 10, 15, and 16;

302.42 acres

Section 12: Lots 2 (W<sup>1</sup>/<sub>2</sub> and SE<sup>1</sup>/<sub>4</sub>), 3 through 16;

602.60 acres

Section 13: Lots 1 through 16;

648.28 acres

Section 14: Lots 1, 2, 6 through 9, 14 and 15;

299.87 acres

Section 24: Lots 1 through 16;

630.52 acres

Section 25: Lots 1, 2, 7 through 10, 15, and 16;

315.78 acres

#### T.44N., R.71W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 35: Lots 1, 2, 7 through 10, 15, and 16;

328.92 acres

Total: 3,449.32 acres

Land descriptions and acreage are based on the BLM Status of Public Domain Land and Mineral Titles approved Coal Plats as of July 12, 2002 and September 11, 2002.

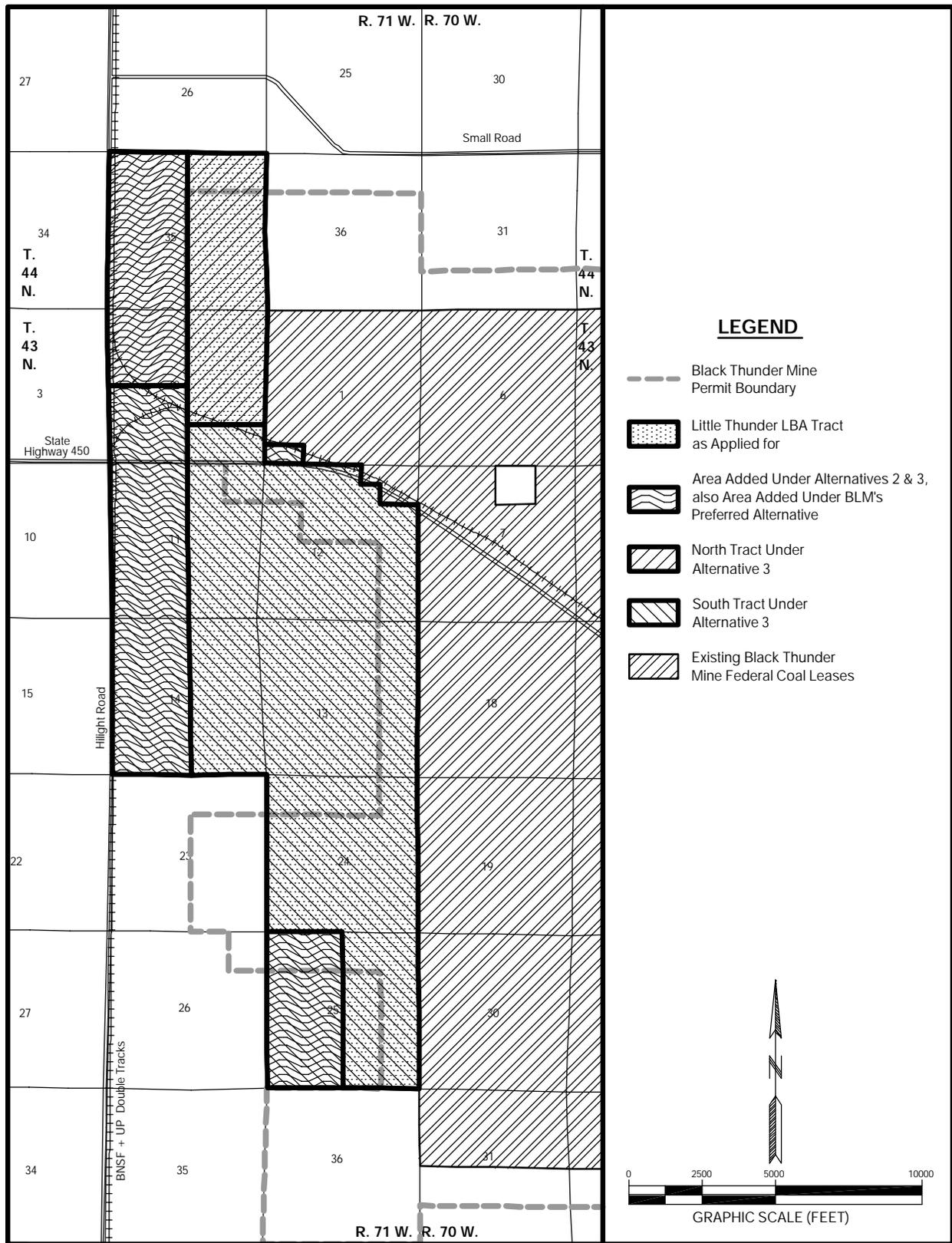


Figure 2-3. Little Thunder LBA Alternative Tract Configurations.

## *2.0 Proposed Action and Alternatives*

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As indicated in Chapter 1, Section 1.4 and Appendix B, some of the above described lands in the Little Thunder LBA Tract are unsuitable for mining due to the presence of the BNSF & UP railroad and Wyoming Highway 450 ROWs. Although these lands would not be mined, they are included in the tract to allow maximum recovery of all the mineable coal outside of the railroad and highway ROWs and associated buffer zones and to comply with the coal leasing regulations, which do not allow leasing of less than 10-acre aliquot parts. The tract as applied for includes approximately 3,449.32 mineable acres. TBCC estimates that it includes approximately 479.3 million tons of in-place coal, and that about 440 million tons of that coal would be recoverable, based on an assumed recovery factor of approximately 92 percent.

BLM will independently evaluate the volume and average quality of the mineable coal resources included in the tract as part of the fair market value determination process. The fact that the coal within the ROWs cannot all be recovered would be considered by BLM in the fair market value determination for the LBA tract. 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 Little Thunder LBA Tract is included in Section 3.3 of this document.

The approved Black Thunder Mine Permit 233 Term T6 includes

monitoring and mitigation measures for the Black Thunder Mine that are required by SMCRA and Wyoming State Law. If the Little Thunder LBA Tract is acquired by ALC, these monitoring and mitigation measures would be extended to cover operations on the LBA tract when the coal mining permit is amended to include the tract. This amended permit would have to be approved before mining operations could take place on the tract. These monitoring and mitigation measures are considered to be part of the Proposed Action and other action alternatives during the leasing process because they are regulatory requirements.

The Little Thunder LBA Tract would be mined as an integral part of the Black Thunder Mine under the Proposed Action. The Black Thunder Mine is already operating under both an approved state mining permit and MLA mining plan. Both the approved state mining permit and MLA mining plan would require amendment to include the LBA tract. Since the Little Thunder LBA Tract would be an extension of the existing Black Thunder Mine, the facilities and infrastructure would be the same as those identified in the WDEQ/LQD Mine Permit 233 Term T6 approved June 29, 2000 and the BLM Resource Recovery and Protection Plan approved October 5, 1999 for the Black Thunder Mine.

TBCC's currently approved air quality permit from the WDEQ/AQD allows up to 100 million tons of coal per year to be mined through year 2027. The Black Thunder Mine produced 48.7

million tons of coal in 1999, 60.1 million tons in 2000, 67.6 million tons in 2001, and 65.1 million tons in 2002 (Wyoming State Inspector of Mines 1999, 2000, 2001, and 2002). Under the No Action Alternative, TBCC estimates that the Black Thunder Mine will produce 68.5 million tons per year for five years. Production will decrease when the West Pit of the mine reaches the existing West Black Thunder Lease boundary in 2008. The production rate will drop after 2008 because the configuration of the remaining reserves will cause the mine to relocate and retire mining equipment. Due to the mining conditions, the mine will produce an average of 23.3 million tons per year during the last 15 years. TBCC estimates that, under the No Action Alternative, the mine will produce its remaining 854.3 million tons of recoverable coal reserves over a 23-year time-period at an average annual production rate of 37.1 million tons.

Under the Proposed Action, TBCC estimates that the Black Thunder mine would produce between 66 and 68.5 million tons per year for the next 12 years, then production would decrease when the mining conditions and pit configurations change once the West Pit reaches the Little Thunder Lease Boundary. Acquisition of the Little Thunder LBA Tract would allow the Black Thunder Mine to maintain peak production rates between 66 and 68.5 million tons per year for eight additional years. Under the Proposed Action, the mine would produce 1,294.3 million tons of recoverable coal

reserves over a 30.5-year time-period at an average annual production rate of 42.5 million tons.

If ALC acquires the Little Thunder LBA Tract as applied for, they estimate that a total of 1,294.3 million tons of recoverable coal would be mined after January 1, 2003, with an estimated 440 million tons coming from the LBA tract. This estimate of recoverable reserves equates to about an eight percent loss of coal under normal mining practices. As of December 31, 2002, 765 million tons of coal have been mined from within the current permitted area of the mine.

Prior to disturbance, sediment control structures would be built as needed downstream of the mine to control runoff. Additional support structures, such as roads, powerlines, substations, flood control measures, etc., would be constructed in advance of mining.

Topsoil removal with heavy 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 would be used to haul and distribute the stockpiled topsoil.

The Black Thunder Mine is one of several mines currently operating in the PRB where the coal seams are notably thick and the overburden is relatively thin. Mining would be

## *2.0 Proposed Action and Alternatives*

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conducted in three separate pits identified as the West Pit, South Pit and North Pit. Overburden removal has been and would continue to be conducted using trucks and shovels, draglines, and/or direct cast blasting. Other equipment used during overburden removal and backfilling includes dozers, scrapers, excavators, front-end loaders, graders and water trucks. Most overburden and all coal is drilled and blasted to facilitate efficient excavation. The design of the Black Thunder Mine seeks to confine disturbance to the active mine blocks. As overburden is removed, most is directly placed into areas where coal has already been removed. Once the overburden has been replaced it is sampled and verified to be suitable overburden material, then graded to approximate final contour, ripped and finally topsoiled. If necessary, material that is found to be unsuitable would be adequately covered with suitable material prior to grading and topsoiling. Elevations consistent with an approved PMT plan would be established as quickly as possible. Under certain conditions, the PMT may not be immediately achievable. This occurs when there is an excess of material that 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. Once a seedbed has been formed, vegetation would be reestablished that is consistent with the postmining land use.

Coal would be produced from three seams, the Upper, Middle, and Lower Wyodak, 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 are and would continue to be facilitated by extensive use of near-pit crushers and overland conveyors. Coal would be loaded with electric-powered shovels or hydraulic excavators into off-highway haul trucks for transport to crushing facilities. Coal haul roads would be temporary structures built within the mine areas. All coal transfer location points and crushing operations are controlled by baghouse-type dust collectors or PECs. The truck dumping operations use stilling sheds to control fugitive dust and the overland conveyor is covered by a dust hood. There are two existing crushing facilities, two silos, and a slot storage facility within the permit area that provide capacity to produce at the permitted level. While sufficient capacity exists, future changes in facilities may be constructed to improve operating efficiency and air quality protection. The existing near-pit crusher/conveyor systems would probably be relocated if ALC acquires the Little Thunder LBA Tract as applied for.

Current full-time employment at the Black Thunder Mine is approximately 580. If the LBA tract is acquired, TBCC anticipates that the average

annual coal production would be approximately 42.5 million tons and no employment changes would be expected.

### 2.3.2 Little Thunder LBA Tract Alternative 1

Under the Little Thunder LBA Tract Alternative 1, the No Action Alternative, the application to lease the coal included in the Little Thunder LBA Tract would be rejected, the tract would not be offered for competitive sale, and the coal included in the tract would not be mined. This would not affect permitted mining activities and employment on the existing leases at the Black Thunder Mine and would not preclude an application to lease the coal included in the Little Thunder LBA Tract in the future. Portions of the surface of the Little Thunder LBA Tract could be disturbed due to overstripping to allow coal to be removed from the adjacent existing leases.

Approximately 12,772.9 acres of federal coal are currently leased at the Black Thunder Mine and a total of about 18,476 acres of land will be affected in mining the current leases. Under the No Action Alternative, TBCC estimates that the average annual production at the Black Thunder Mine after 2002 will be 37.1 million tons, and average employment will be approximately 580 persons.

In order to compare the economic and environmental consequences of mining these lands versus not mining them, this EIS was prepared under

the assumption that an LBA tract would not be mined in the foreseeable future if the No Action Alternative for that tract is selected. However, selection of the Little Thunder No Action Alternative would not preclude leasing and mining of a rejected tract in the future, either as a maintenance tract for an existing mining operation or as a new start mine.

### 2.3.3 Little Thunder LBA Tract Alternative 2 (Preferred Alternative)

Under Alternative 2 for the Little Thunder LBA Tract, BLM would reconfigure the tract and hold a competitive coal sale for the lands included in the reconfigured tract and issue a lease to the successful bidder.

The modified tract would be subject to standard and special lease stipulations developed for the PRB and this tract if it is offered for sale (Appendix D). Alternative 2 for the Little Thunder LBA Tract assumes that ALC would be the successful bidder on the tract if a lease sale is held and that the tract would be mined as a maintenance lease for the Black Thunder Mine. Other assumptions are the same as for the Proposed Action. Alternative 2 is the Preferred Alternative of the BLM for the Little Thunder LBA Tract.

In evaluating the Little Thunder coal lease application, BLM identified a study area, shown in Figure 2-3, that included the tract as applied for and adjacent unleased federal coal that BLM could add to the tract to avoid creating a potential bypass situation and to maintain or increase the potential for competitive interest in

## 2.0 Proposed Action and Alternatives

the remaining unleased coal in this area. The BLM's Preferred Alternative for the Little Thunder LBA Tract is to add all of the study area lands to the tract as applied for, shown in Figure 2-3. Under the Preferred Alternative, BLM would add the following lands to the Little Thunder LBA Tract as applied for:

### T.43N., R.71W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 1: Lot 16 (S $\frac{1}{2}$ );  
19.81 acres  
Section 2: Lots 7 through 10 and 15 through 18;  
321.18 acres  
Section 11: Lots 3 through 6 and 11 through 14;  
318.93 acres  
Section 14: NW $\frac{1}{4}$  NW $\frac{1}{4}$ , Lots 3 through 5 and 10 through 13;  
324.79 acres  
Section 25: Lots 3 through 6 and 11 through 14;  
316.37 acres

### T.44N., R.71W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 35: Lots 3 through 6 and 11 through 14;  
333.10 acres  
Total: 1,634.18 acres

TBCC estimates that these 1,634.18 acres contain approximately 216 million tons of in-place coal.

The legal description of the Little Thunder LBA Tract under the BLM's Preferred Alternative is as follows:

### T.44N., R.71W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 35: Lots 1 through 16;  
662.02 acres

### T.43N., R.71W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 1: Lot 16(S $\frac{1}{2}$ );  
19.81 acres  
Section 2: Lots 5 through 20;  
642.11 acres  
Section 11: Lots 1 through 16;  
621.35 acres  
Section 12: Lots 2(W $\frac{1}{2}$ , SE $\frac{1}{4}$ ) and 3 through 16;  
602.60 acres  
Section 13: Lots 1 through 16;  
648.28 acres  
Section 14: NW $\frac{1}{4}$  NW $\frac{1}{4}$  and Lots 1 through 15;  
624.66 acres  
Section 24: Lots 1 through 16;  
630.52 acres  
Section 25: Lots 1 through 16;  
632.15 acres

Total: 5,083.50 acres

The Alternative 2 reconfiguration of the Little Thunder LBA Tract, therefore, results in a tract comprising approximately 5,083.50 acres containing approximately 695.3 million tons of in-place coal. Not all of the coal included in this tract would be mineable, however. Some of the coal added by BLM under Alternative 2 is located within the BNSF & UP railroad ROW. This coal will not be mined because it has been determined to be unsuitable for mining according to the coal leasing unsuitability criteria (43 CFR 3461).

Although the coal included in these lands within the ROW could not be mined, these lands would be included in this alternative tract configuration to allow maximum recovery of all the mineable reserves adjacent to the ROW and to comply with the coal leasing regulations, which do not allow leasing of less than 10-acre aliquot parts. TBCC estimates that approximately 113 million tons of coal would be produced from these additional 1,634.18 acres. The reconfigured tract would contain about 553 million tons of recoverable coal.

BLM will independently evaluate the volume and average quality of the coal resources included in each tract offered for sale as part of the fair market value determination process. The fact that the coal within the ROW cannot all be recovered will be considered by BLM in the fair market value determination for the LBA tract. BLM's estimate of the mineable federal coal reserves and average quality of the coal included in each tract will be published in the sale notice for each tract that is offered for sale. Some general coal quality information in the area of the LBA tracts considered in this EIS is included in Section 3.3 of this document.

#### 2.3.4 Little Thunder LBA Tract Alternative 3

Under Alternative 3 for the Little Thunder LBA Tract, BLM is considering splitting the tract described under Alternative 2 and offering two tracts for competitive

sale. The two tracts would each be subject to standard and special lease stipulations developed for the PRB and each tract if they are offered for sale (Appendix D). Alternative 3 for the Little Thunder LBA Tract assumes that ALC would be the successful bidder on the two tracts if lease sales are held and that the tracts would be mined as maintenance leases for the Black Thunder Mine. Other assumptions would be the same as for the Little Thunder LBA Tract Proposed Action.

Under Alternative 3, BLM is considering a division of the tract described in Alternative 2 into a north tract and a south tract in order to increase competitive interest in the federal coal. The tract described in Alternative 2 would be split into two tracts roughly along State Highway 450 and the BNSF & UP railroad spur to the Jacobs Ranch and Black Thunder Mines (Figure 2-3). The two tracts would be offered for sale at separate, competitive sealed bid sales. Both the north and south tracts could be offered for sale at this time, or the south tract could be offered for sale at this time and the north tract could potentially be combined with other unleased federal coal to create a larger tract. This north tract would potentially be of competitive interest to more than one mine.

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

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### T.44N., R.71W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 35: Lots 1 through 16;  
662.02 acres

### T.43N., R.71W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 2: Lots 5 through 14;  
403.47 acres

Total: 1,065.49 acres

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

### T.43N., R.71W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 1: Lot 16 (S $\frac{1}{2}$ );  
19.81 acres

Section 2: Lots 15 through 20;  
238.64 acres

Section 11: Lots 1 through 16;  
621.35 acres

Section 12: Lots 2(W $\frac{1}{2}$ , SE $\frac{1}{4}$ ), 3 through 16;  
602.60 acres

Section 13: Lots 1 through 16;  
648.28 acres

Section 14: NW $\frac{1}{4}$  NW $\frac{1}{4}$ , Lots 1 through 15;  
624.66 acres

Section 24: Lots 1 through 16;  
630.52 acres

Section 25: Lots 1 through 16;  
632.15 acres

Total: 4,018.01 acres

Under the Alternative 3 reconfiguration of the Little Thunder LBA Tract, the north tract would include 1,065.49 acres containing

approximately 155.7 million tons of in-place coal and the south tract would include 4,018.01 acres containing approximately 539.6 million tons of in-place coal, according to information provided by the applicant. As discussed under Alternative 2, not all of the coal included in the north and south tracts would be mineable. Some of the coal included in the two tracts is located within the BNSF & UP railroad ROW. This coal would not be mined because it has been determined to be unsuitable for mining according to the coal leasing unsuitability criteria (43 CFR 3461). Although the coal included in these lands could not be mined, the lands would be included in the Alternative 3 tract configuration to allow maximum recovery of all the mineable reserves adjacent to the ROW and to comply with the coal leasing regulations, which do not allow leasing of less than 10-acre aliquot parts. TBCC estimates that approximately 111.9 million tons of coal would be produced from the 1,065.49-acre north tract and approximately 441.1 million tons of coal would be produced from the 4,018.01-acre south tract.

BLM will independently evaluate the volume and average quality of the coal resources included in each tract offered for sale as part of the fair market value determination process. The fact that the coal within the ROW cannot all be recovered will be considered by BLM in the fair market value determination for the LBA tracts. BLM's estimate of the mineable federal coal reserves and

average quality of the coal included in each tract will be published in the sale notice for each tract that is offered for sale. Some general coal quality information in the area of the LBA tracts considered in this EIS is included in Section 3.3 of this document.

**2.4 Proposed Action and Alternatives for the West Roundup LBA Tract**

**2.4.1 West Roundup LBA Tract Proposed Action**

Under the Proposed Action for the West Roundup LBA Tract, the tract as applied for by TCC would be offered for lease at a separate, sealed-bid, competitive lease 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 configuration proposed in the West Roundup LBA Tract lease application. As shown in Figure 2-4a, the West Roundup LBA Tract as applied for consists of two tracts separated by the North Rochelle Mine railroad spur and facilities and a county road (Reno Road). The Proposed Action assumes that TCC will be the successful bidder on the West Roundup LBA Tract if it is offered for sale.

The legal description of the proposed West Roundup LBA Tract coal lease lands as applied for by TCC under the Proposed Action is as follows:

T.42N., R.70W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 6: Lots 8 through 19, 20(N<sup>1/2</sup>), 21(N<sup>1/2</sup>), 22(N<sup>1/2</sup>), and 23(N<sup>1/2</sup>);

539.28 acres

Section 7: Lots 5(S<sup>1/2</sup>), 6(S<sup>1/2</sup>), 7(S<sup>1/2</sup>), 8(S<sup>1/2</sup>), 9 through 14;

303.15 acres

Section 8: Lots 1(SW<sup>1/4</sup>), 2(S<sup>1/2</sup>), 3(S<sup>1/2</sup>), 4(S<sup>1/2</sup>), 5 through 12;

384.085 acres

Section 9: Lots 5(SW<sup>1/4</sup>), 11, 12, and 14;

130.388 acres

T.43N., R.70W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 31: Lots 13 through 20;

314.23 acres

T.42N., R.71W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 1: Lots 5, 6, and 11 through 13;

199.51 acres

Total: 1,870.638 acres

Land descriptions and acreage are based on the BLM Status of Public Domain Land and Mineral Titles approved Coal Plats as of February 12, 2003, May 13, 2003, and March 24, 2003.

As indicated in Chapter 1, Section 1.4 and Appendix B, no lands in the West Roundup LBA Tract as applied for were found to be unsuitable for mining. The tract as applied for includes approximately 1,870.638 mineable acres. TCC estimates that it

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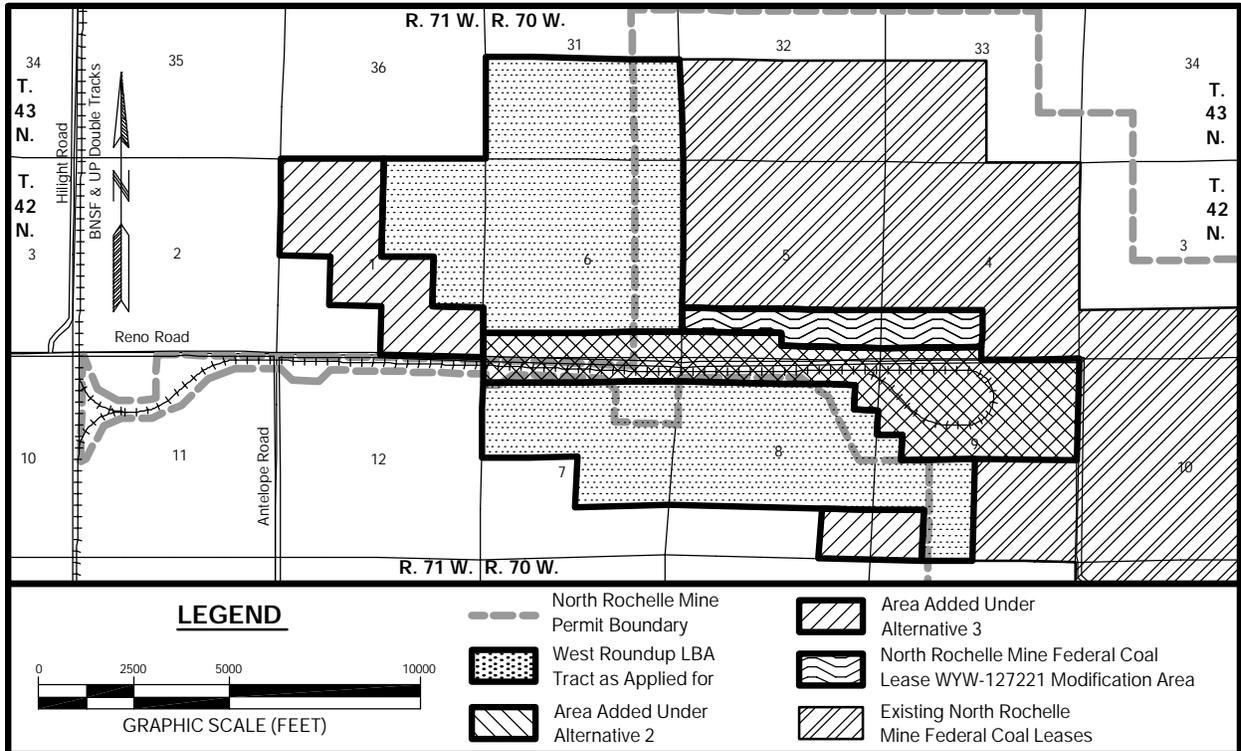


Figure 2-4a. West Roundup LBA Alternative Tract Configurations.

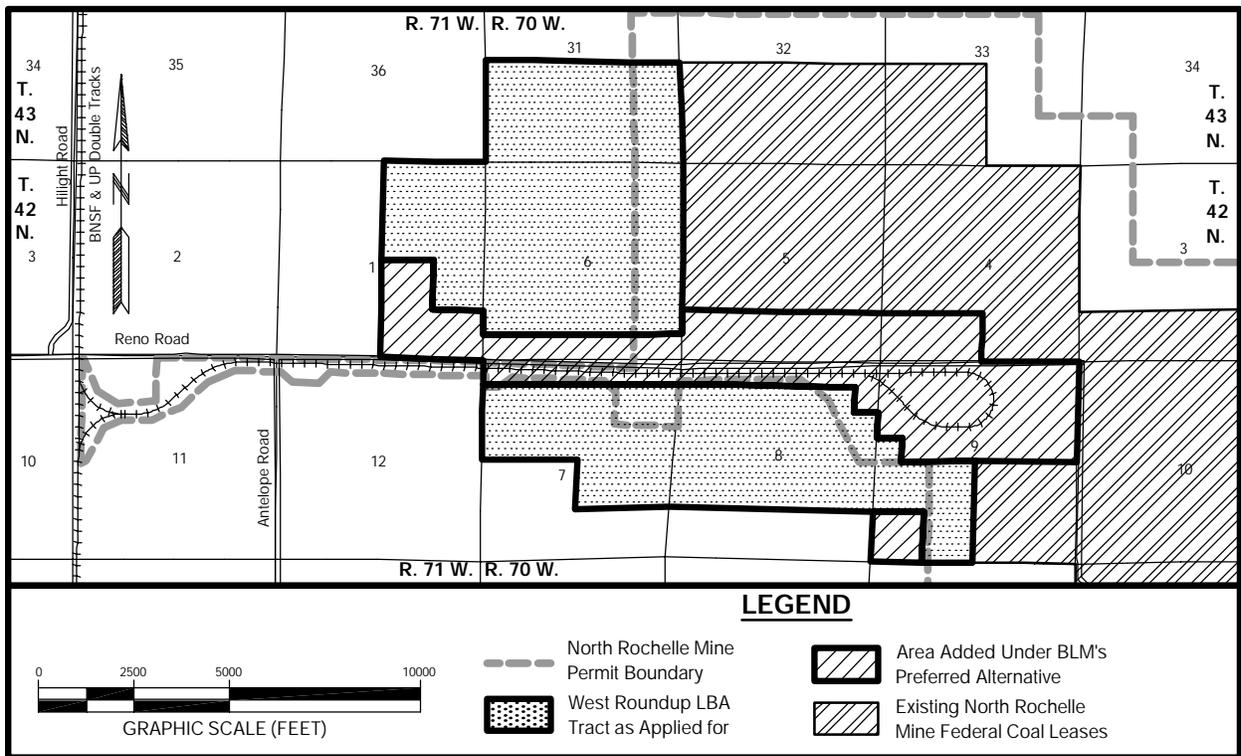


Figure 2-4b. West Roundup LBA Preferred Alternative Tract Configuration.

includes approximately 192.6 million tons of in-place coal reserves and that about 173.3 million tons of that coal would be recoverable assuming a recovery factor of 90 percent.

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 West Roundup LBA Tract is included in Section 3.3 of this document.

The approved North Rochelle Mine Permit 550 Term T5 includes monitoring and mitigation measures for the North Rochelle Mine that are required by SMCRA and Wyoming State Law. If the West Roundup LBA Tract is acquired by TCC, these monitoring and mitigation measures would be extended to cover operations on the LBA tract when the coal mining permit is amended to include the tract. This amended permit would have to be approved before mining operations could take place on the tract. These monitoring and mitigation measures are considered to be part of the Proposed Action and other action alternatives during the leasing process because they are regulatory requirements.

The West Roundup LBA Tract would be mined as an integral part of the North Rochelle Mine under the Proposed Action. The North Rochelle

Mine is already operating under both an approved state mining permit and MLA mining plan. Both the approved state mining permit and MLA mining plan would require amendment to include the LBA tract. Since the West Roundup LBA Tract would be an extension of the existing North Rochelle Mine, the facilities and infrastructure would be the same as those identified in the WDEQ/LQD Mine Permit 550 Term T5 approved August 29, 2000 and the BLM Resource Recovery and Protection Plan approved July 12, 2000 for the North Rochelle Mine.

TCC's currently approved air quality permit allows up to 35 million tons of coal per year to be mined through year 2018. The North Rochelle Mine produced 8.2 million tons of coal in 1999, 17.2 million tons of coal in 2000, 23.9 million tons of coal in 2001, and 23.9 million tons of coal in 2002 (Wyoming State Inspector of Mines 1999, 2000, 2001, and 2002). Under the No Action Alternative, the North Rochelle Mine would mine its remaining 259 million tons of in-place coal reserves in approximately 6.7 years at an average production rate of 35 million tons per year. Under the Proposed Action, TCC currently estimates that average annual production would be 35 million tons and the life of the mine would be extended by approximately five years.

If TCC acquires the West Roundup LBA Tract as applied for, they estimate that a total of 406.3 million tons of coal would be mined after January 1, 2003, with an estimated 173.3 million tons coming from the

## *2.0 Proposed Action and Alternatives*

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LBA tract. This estimate of recoverable reserves assumes that about 10 percent of the coal would be lost under normal mining practices, based on historical recovery factors at the North Rochelle Mine. As of December 31, 2002, 73.2 million tons of coal had been mined from within the current permitted area of the mine.

Topsoil removal with heavy 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 would be used to haul and distribute the stockpiled topsoil.

The North Rochelle Mine is one of several mines currently operating in the PRB where the coal seams are notably thick and the overburden is relatively thin. Overburden removal has been and would continue to be by truck/shovel operation and the combination of cast-blasting and dragline. Most overburden and all coal is drilled and blasted to facilitate efficient excavation. The design of the North Rochelle Mine seeks to confine disturbance to the active mine blocks.

As overburden is removed, most is directly placed into areas where coal has already been removed. Once the overburden has been replaced it is sampled and verified to be suitable overburden material, then graded to approximate final contour, ripped and finally topsoiled. If necessary, material that is found to be

unsuitable would be adequately covered with suitable overburden material prior to grading and topsoiling. Elevations consistent with an approved PMT plan would be established as quickly as possible. Under certain conditions, the PMT may not be immediately achievable. This occurs when there is an excess of material that 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. Once a seedbed has been formed, vegetation would be reestablished that is consistent with the postmining land use.

Coal would be produced from two seams of the Wyodak bed, a thin, discontinuous rider seam (referred to as the “D” seam or Upper Wyodak) and a uniformly thick main seam (referred to as the “E” seam or Middle Wyodak), 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. The “D” seam (Upper Wyodak) fluctuates greatly in thickness and quality throughout the mine area. Therefore, the recoverable portion of the “D” seam is highly variable, thus reducing the overall recovery factor for the coal reserves to approximately 90 percent. Mining efficiency and air quality protection are and would continue to be facilitated by extensive use of near-pit crushers and overland conveyors.

Coal would be loaded with electric-powered shovels or hydraulic front-end loaders into off-highway haul trucks for transport to crushing facilities. Coal haul roads, crushing facilities and conveyors would be temporary structures built within the mine area. All coal transfer location points and crushing operations are controlled by baghouse-type dust collectors, and dry mist foggers are being reviewed for permitting at several locations throughout the mine. Truck dumping operations use stilling sheds to control fugitive dust. While sufficient capacity exists, future changes in facilities may be constructed to improve operating efficiency and air quality protection. Additional near-pit crusher/conveyor systems would be constructed and moved as the mining operation progresses. A new truck dump/crusher and conveyor system was added in 2001.

Current full-time employment at the North Rochelle Mine is approximately 250. If the LBA tract is acquired, TCC anticipates that the average annual coal production would be approximately 35 million tons with employment increasing to 400 persons.

The West Roundup LBA Tract is adjacent to the North Rochelle Mine, but it is also located adjacent to the Black Thunder Mine, operated by TBCC. Arch Coal, Inc., the parent company of TBCC, recently purchased the North Rochelle Mine. Arch Coal has not yet identified how the mining operations at the Black Thunder and North Rochelle Mines

will be conducted, but the proposed rate of coal production, the mining sequence, and the mining equipment could change as a result of the merger of the two operations. However, the area of disturbance and the impacts of removing the coal would not be substantially different from the area of disturbance and the impacts of mining if the Black Thunder and North Rochelle operations did not merge.

#### 2.4.2 West Roundup LBA Tract Alternative 1

Under the West Roundup LBA Tract Alternative 1, the No Action Alternative, the application to lease the coal included in the West Roundup LBA Tract would be rejected, the tract would not be offered for competitive sale, and the coal included in the tract would not be mined. This would not affect permitted mining activities and employment on the existing leases at the North Rochelle Mine and would not preclude an application to lease the coal included in the West Roundup LBA Tract in the future. Portions of the surface of the West Roundup LBA Tract could be disturbed due to overstripping to allow coal to be removed from the adjacent existing leases.

Approximately 3,443.5 acres of federal coal are currently leased at the North Rochelle Mine and a total of about 5,288 acres of land will be affected in mining the current leases. Under the No Action Alternative, TCC estimates that the average annual production at the North Rochelle

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Mine after 2002 will be 35 million tons, and average employment will be approximately 250 persons.

In order to compare the economic and environmental consequences of mining these lands versus not mining them, this EIS was prepared under the assumption that an LBA tract would not be mined in the foreseeable future if the No Action Alternative for that tract is selected. However, selection of the West Roundup No Action Alternative would not preclude leasing and mining of the tract in the future, either as a maintenance tract for an existing mining operation or as a new start mine.

### 2.4.3 West Roundup LBA Tract Alternative 2

Under Alternative 2 for the West Roundup LBA Tract, BLM would reconfigure the tract and hold a competitive coal sale for the lands included in the reconfigured tract and issue a lease to the successful bidder. The modified tract would be subject to standard and special lease stipulations developed for the PRB and this tract if it is offered for sale (Appendix D). Alternative 2 for the West Roundup LBA Tract assumes that TCC would be the successful bidder on the tract if a lease sale is held and that the tract would be mined as a maintenance lease for the North Rochelle Mine. Other assumptions are the same as for the Proposed Action.

As applied for, the West Roundup LBA Tract consists of two non-contiguous tracts of federal coal

separated by the North Rochelle Mine railroad spur, the North Rochelle Mine facilities, and a county road known as Reno Road (Figure 1-4). Under Alternative 2 for the West Roundup LBA Tract, the size of the tract as applied for would be increased to include the area between the two tracts as applied for (Figure 2-4a). BLM is considering including this coal to decrease the potential that some or all of the federal coal in this area would be bypassed. As discussed in Section 1.4, USDA-FS has determined that lands under a USDA-FS special use permit for ancillary facilities at the North Rochelle Mine are unsuitable for mining under Unsuitability Criterion 2. The area that would be added under this alternative is included in the USDA-FS special use permit. It would not be economically feasible to move the railroad spur, county road, and mine facilities to recover all the coal at this time. However, BLM is considering including this area in the tract because it may be possible to recover portions of the coal reserves in this area when the rest of the tract is mined, if it is leased at this time. It may also be economically feasible at some point in the future to move the road and railroad spur and recover the coal if it is leased.

On February 9, 2001, TCC filed an application to modify an existing federal coal lease (WYW-127221) at the North Rochelle Mine by adding 155.90 acres that lie between the existing lease and the North Rochelle railroad loop. BLM processed that lease modification application and the modification area, shown in Figure 2-

4a, was offered for sale to TCC. TCC rejected BLM's offer and made a counter offer, which BLM rejected. As a result, the lands included in the lease modification application were not added to federal coal lease WYW-127221 as proposed, and BLM is adding them to the West Roundup LBA Tract under Alternative 2, to avoid bypassing potentially recoverable coal reserves.

The lands that BLM is considering adding to the tract are:

T.42N., R.70W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 4: Lots 17 and 18;	78.11 acres
Section 5: Lots 17 through 20;	155.64 acres
Section 6: Lots 20(S $\frac{1}{2}$ ), 21(S $\frac{1}{2}$ ), 22(S $\frac{1}{2}$ ), and 23(S $\frac{1}{2}$ );	77.345 acres
Section 7: Lots 5(N $\frac{1}{2}$ ), 6(N $\frac{1}{2}$ ), 7(N $\frac{1}{2}$ ), and 8(N $\frac{1}{2}$ );	77.18 acres
Section 8: Lots 1(N $\frac{1}{2}$ , SE $\frac{1}{4}$ ), 2(N $\frac{1}{2}$ ), 3(N $\frac{1}{2}$ ), and 4(N $\frac{1}{2}$ );	87.855 acres
Section 9: Lots 1 through 4, 5(N $\frac{1}{2}$ , SE $\frac{1}{4}$ ), 6 through 8;	305.872 acres
Total:	<u>782.002 acres</u>

TCC estimates that these 782.002 acres contain approximately 64.4 million tons of mineable coal. The Alternative 2 reconfiguration of the West Roundup LBA Tract, therefore, results in a tract comprising approximately 2,652.69 acres containing approximately 257 million

tons of in-place coal. Using TCC's projected recovery factor of 90 percent, the reconfigured tract would contain about 231.3 million tons of recoverable coal, assuming that the coal underlying the railroad spur and facilities would be economically recoverable at some point in the future.

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. The fact that the coal underlying the railroad spur, county road, and mine facilities cannot be economically recovered at this time will be considered by BLM in the fair market value determination for the LBA tract. 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 West Roundup LBA Tract is included in Section 3.3 of this document.

2.4.4 West Roundup LBA Tract Alternative 3 (Preferred Alternative)

Under Alternative 3 for the West Roundup LBA Tract, BLM would reconfigure the tract and hold a competitive coal sale for the lands included in the reconfigured tract and issue a lease to the successful bidder. The modified tract would be subject to standard and special lease stipulations developed for the PRB and this tract if it is offered for sale (Appendix D). Alternative 3 for the West Roundup LBA Tract assumes

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that TCC would be the successful bidder on the tract if a lease sale is held and that the tract would be mined as a maintenance lease for the North Rochelle Mine. Other assumptions are the same as for the Proposed Action.

Under Alternative 3 for the West Roundup LBA Tract, the size of the tract as applied for would be increased. The area between the two tracts as applied for and the lease modification area would be added as under Alternative 2, to prevent some or all of this coal from potentially being bypassed in the future. As under Alternative 2, the area between the two tracts that would be added under this alternative is included in the USDA-FS special use permit, which USDA-FS has determined to be unsuitable for mining. However, it may be possible to recover portions of coal that would be added under the North Rochelle Mine railroad spur, North Rochelle Mine facilities, and Reno Road when the rest of the tract is mined. In evaluating the West Roundup coal lease application, the BLM identified a study area, shown in Figure 2-4a as the “area added under Alternative 3”, that included unleased federal coal adjacent to the tract as applied for that BLM could add to the tract to potentially maintain or increase the potential for competitive interest in the remaining unleased federal coal in this area. This study area includes approximately 1,179.28 acres containing an estimated 150 million tons of in-place coal. The BLM’s Preferred Alternative for the West Roundup LBA Tract is to add the area included in Alternative 2 and

a portion of the Alternative 3 study area to the tract as applied for. Under the Preferred Alternative, shown in Figure 2-4b, the BLM would add the following lands to the West Roundup LBA Tract as applied for:

### T.42N., R.70W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 4: Lots 17 and 18;	78.110 acres
Section 5: Lots 17 through 20;	155.640 acres
Section 6: Lots 20(S $\frac{1}{2}$ ), 21(S $\frac{1}{2}$ ), 22(S $\frac{1}{2}$ ), and 23(S $\frac{1}{2}$ );	77.345 acres
Section 7: Lots 5(N $\frac{1}{2}$ ), 6(N $\frac{1}{2}$ ), 7(N $\frac{1}{2}$ ), and 8(N $\frac{1}{2}$ );	77.180 acres
Section 8: Lots 1(N $\frac{1}{2}$ , SE $\frac{1}{4}$ ), 2(N $\frac{1}{2}$ ), 3(N $\frac{1}{2}$ ), and 4(N $\frac{1}{2}$ );	87.855 acres
Section 9: Lots 1 through 4, 5(E $\frac{1}{2}$ , NW $\frac{1}{4}$ ), 6 through 8, and 13;	346.072 acres

### T.42N., R.71W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 1: Lots 14, 19, and 20;	119.67 acres
Total:	<u>941.872 acres</u>

TCC estimates that these 941.872 acres contain approximately 126.8 million tons of in-place coal.

The legal description of the West Roundup LBA Tract under the BLM’s Preferred Alternative is as follows:

T.42N., R.70W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 4: Lots 17 and 18;  
78.11 acres  
Section 5: Lots 17 through 20;  
155.64 acres  
Section 6: Lots 8 through 23;  
616.62 acres  
Section 7: Lots 5 through 14;  
380.33 acres  
Section 8: Lots 1 through 12;  
471.94 acres  
Section 9: Lots 1 through 8 and 11 through 14;  
476.46 acres

T.42N., R.71W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 1: Lots 5, 6, 11 through 14, 19, and 20;  
319.18 acres

T.43N., R.70W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 31: Lots 13 through 20;  
314.23 acres

Total: 2,812.51 acres

The Preferred Alternative reconfiguration of the West Roundup LBA Tract, therefore, results in a tract comprising approximately 2,812.51 acres containing approximately 319.4 million tons of in-place coal. Using TCC's projected recovery factor of 90 percent, the reconfigured tract would contain about 287.5 million tons of recoverable coal, assuming that the coal underlying the railroad spur and facilities would be economically

recoverable at some point in the future.

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. The fact that the coal underlying the railroad spur, county road, and mine facilities cannot be economically recovered will be considered by BLM in the fair market value determination for the LBA tract. BLM's estimate of the recoverable 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 West Roundup LBA Tract is included in Section 3.3 of this document.

**2.5 Proposed Action and Alternatives for the West Antelope LBA Tract**

2.5.1 West Antelope LBA Tract Proposed Action

Under the Proposed Action for the West Antelope LBA Tract, the tract as applied for by ACC would be offered for lease at a separate, sealed-bid, competitive lease 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 configuration proposed in the West Antelope LBA Tract lease application (Figure 2-5). The Proposed Action assumes that ACC will be the successful bidder on the

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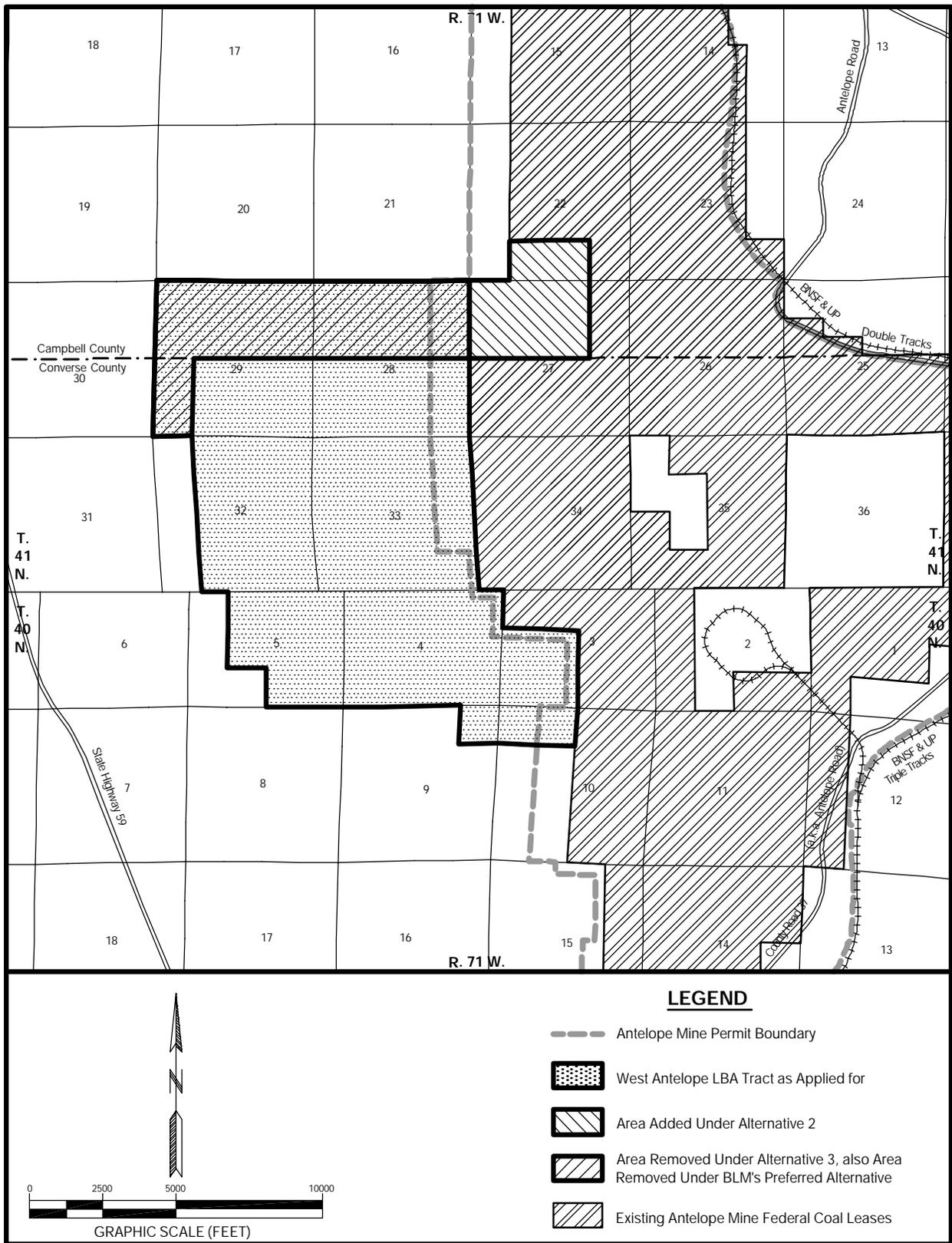


Figure 2-5. West Antelope LBA Alternative Tract Configurations.

West Antelope LBA Tract if it is offered for sale.

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

T.40N., R.71W., 6<sup>th</sup> P.M., Converse County, Wyoming

Section 3: Lots 15 through 18;  
159.78 acres  
Section 4: Lots 5 through 20;  
487.25 acres  
Section 5: Lots 5 through 7, 10 through 15, 19, and 20;  
320.84 acres  
Section 9: Lot 1;  
40.14 acres  
Section 10: Lots 3 and 4;  
80.65 acres

T.41N., R.71W., 6<sup>th</sup> P.M., Converse and Campbell Counties, Wyoming

Section 28: Lots 1 through 16;  
649.21 acres  
Section 29: Lots 1 through 16;  
659.81 acres  
Section 32: Lots 1 through 3, 6 through 11, 14 through 16;  
486.16 acres  
Section 33: Lots 1 through 16;  
658.35 acres  
Total: 3,542.19 acres

Land descriptions and acreage are based on the BLM Status of Public Domain Land and Mineral Titles approved Coal Plats as of December 2, 2001 and December 4, 2001.

As indicated in Chapter 1, Section 1.4 and Appendix B, no lands in the West Antelope LBA Tract were found to be unsuitable for mining. ACC's approved mining plan avoids disturbing Antelope Creek and an adjacent buffer zone, so it is assumed that any coal resources included in the above described lands that are beneath Antelope Creek would not be recovered. If coal under these lands is excluded, ACC estimates that the tract as applied for includes approximately 2,755.16 mineable acres with approximately 293.9 million tons of in-place coal, 245.6 million tons of mineable coal, and that about 228.4 million tons of that coal would be recoverable assuming a recovery factor of 93 percent.

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. The fact that the coal underlying Antelope Creek and the adjacent buffer zone will not be mined would be considered by BLM in the fair market value determination for the LBA tract. BLM's estimate of the recoverable 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 West Antelope 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 West

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Antelope LBA Tract is acquired by ACC, these monitoring and mitigation measures would be extended to cover operations on the LBA tract when the coal mining permit is amended to include the tract. This amended permit would have to be approved before mining operations could take place on the tract. These monitoring and mitigation measures are considered to be part of the Proposed Action and other Action Alternatives during the leasing process because they are regulatory requirements.

The West Antelope LBA Tract would be mined as an integral part of the Antelope Mine under the Proposed Action. The Antelope Mine is already operating under both an approved state mining permit and MLA mining plan. Both the approved state mining permit and MLA mining plan would require amendment to include the LBA tract. Since the West Antelope LBA Tract would be an extension of the Antelope Mine, the facilities and infrastructure would be the same as those identified in the WDEQ/LQD Mine Permit 525 Term T6 approved November 3, 1998 and the BLM Resource Recovery and Protection Plan approved August 27, 2001 for the Antelope Mine.

ACC's currently approved air quality permit allows up to 32 million tons of coal per year to be mined through year 2017. The Antelope Mine produced 22.7 million tons of coal in 1999, 23 million tons of coal in 2000, 24.6 million tons of coal in 2001, and 26.8 million tons of coal in 2002 (Wyoming State Inspector of Mines 1999, 2000, 2001, and 2002). Under

the No Action Alternative, the Antelope Mine would mine its remaining 320.5 million tons of recoverable coal reserves in approximately 24 years at an average annual production rate of 13.4 million tons and at a maximum production rate of 32 million tons per year. Under the Proposed Action, ACC currently estimates that average annual coal production would be 23 million tons, the maximum annual production would be 32 million tons, and the life of the mine is expected to remain at 24 years.

If ACC acquires the West Antelope LBA Tract as applied for, they estimate that a total of 548.9 million tons of coal would be mined after January 1, 2003, with an estimated 228.4 million tons coming from the LBA tract. This estimate of recoverable reserves assumes that about seven percent of the coal would be lost under normal mining practices, based on historical recovery factors at the Antelope Mine. As of December 31, 2002, 195.5 million tons of coal had been mined from within the current permitted area of the mine.

Topsoil removal with heavy 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 would be used to haul and distribute the stockpiled topsoil.

Overburden has been and would continue to be removed by dragline and truck and shovel operations. Most overburden and all coal is drilled and blasted to facilitate efficient excavation. The design of the Antelope Mine seeks to confine disturbance to the active mine blocks. As overburden is removed, most would be directly placed into areas where coal has already been removed. Once the overburden has been replaced it is sampled and verified to be suitable overburden material, then graded to approximate final contour, ripped and finally topsoiled. If necessary, material that is found to be unsuitable would be adequately covered with suitable overburden material prior to grading and topsoiling. Elevations consistent with an approved PMT plan would be established as quickly as possible. Under certain conditions, the PMT may not be immediately achievable. This occurs when there is an excess of material that 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. Once a seedbed has been formed, vegetation would be reestablished that is consistent with the postmining land use.

Coal would be produced from as many as four seams of the primary Anderson and Canyon beds 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 are and would continue to be facilitated by extensive use of near-pit crushers and overland conveyors from the crushers to the storage and loadout facilities. Coal would be loaded with electric-powered shovels or hydraulic excavators into off-highway haul trucks for transport to crushing facilities. Coal haul roads, crushing facilities and conveyors would be temporary structures built within the mine area. All coal transfer location points and crushing operations are controlled by baghouse-type dust collectors or PECs. The truck dumping operations use stilling sheds to control fugitive dust and the overland conveyors are covered by dust hoods. While sufficient capacity exists, future changes in facilities may be constructed to improve operating efficiency and air quality protection. The conveyor systems would be extended to reach each of the various mine areas if ACC acquires the West Antelope LBA Tract.

Current full-time employment at the Antelope Mine is approximately 265. If the LBA tract is acquired, ACC anticipates that the average annual coal production would be approximately 23 million tons, and no additional employment would be expected.

#### 2.5.2 West Antelope LBA Tract Alternative 1

Under the West Antelope LBA Tract Alternative 1, the No Action

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Alternative, the application to lease the coal included in the West Antelope LBA Tract would be rejected, the tract would not be offered for competitive sale, and the coal included in the tract would not be mined. This would not affect permitted mining activities and employment on the existing leases at the Antelope Mine and would not preclude an application to lease the coal included in the West Antelope LBA Tract in the future. Portions of the surface of the West Antelope LBA Tract could be disturbed due to overstripping to allow coal to be removed from the adjacent existing leases.

Approximately 8,019.2 acres of federal coal are currently leased at the Antelope Mine and a total of about 8,821 acres of land will be affected in mining the current leases. Under the No Action Alternative, ACC estimates that the average annual production at the Antelope Mine after 2002 will be 13.4 million tons, and average employment will be approximately 265 persons.

In order to compare the economic and environmental consequences of mining these lands versus not mining them, this EIS was prepared under the assumption that an LBA tract would not be mined in the foreseeable future if the No Action Alternative for that tract is selected. However, selection of the West Antelope No Action Alternative would not preclude leasing and mining of the tract in the future, either as a maintenance tract for an existing mining operation or as a new start mine.

### 2.5.3 West Antelope LBA Tract Alternative 2

Under Alternative 2 for the West Antelope LBA Tract, BLM would reconfigure the tract and hold a competitive coal sale for the lands included in the reconfigured tract and issue a lease to the successful bidder. The modified tract would be subject to standard and special lease stipulations developed for the PRB and that tract if it is offered for sale (Appendix D). Alternative 2 for the West Antelope LBA Tract assumes that ACC would be the successful bidder on the tract if a lease sale is held and that the tract would be mined as a maintenance lease for the Antelope Mine. Other assumptions are the same as for the Proposed Action.

BLM is considering an alternate tract configuration for the West Antelope LBA Tract in order to avoid creating a potential bypass situation (Figure 2-5). Adding the area between the West Antelope LBA Tract as applied for and the existing Horse Creek lease (WYW 141435, issued effective December 1, 2000) would enlarge the original configuration of the West Antelope LBA Tract. The lands that BLM is considering adding to the tract are:

#### T.41N., R.71W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 22: Lots 2 and 16;	
	85.20 acres
Section 27: Lots 6 through 11;	
	250.51 acres
Total:	<u>335.71 acres</u>

The increase to the West Antelope LBA Tract would be 335.71 acres containing approximately 27.9 million tons of in-place coal. The Alternative 2 reconfiguration, therefore, results in a tract comprising approximately 3,877.90 acres containing approximately 321.8 million tons of in-place coal. After eliminating coal that would not be mined beneath Antelope Creek and the adjacent buffer zone, ACC estimates that the reconfigured tract includes approximately 3,091 mineable acres with approximately 273.4 million tons of mineable coal. Using ACC's projected recovery factor of 93 percent, the reconfigured tract would contain about 254.3 million tons of recoverable coal.

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. The fact that the coal underlying Antelope Creek and the adjacent buffer zone will not be mined would be considered by BLM in the fair market value determination for the LBA tract. 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 West Antelope LBA Tract is included in Section 3.3 of this document.

#### 2.5.4 West Antelope LBA Tract Alternative 3 (Preferred Alternative)

Under Alternative 3 for the West Antelope LBA Tract, BLM is

considering a different tract configuration. As under Alternative 2, if this tract configuration is selected BLM would hold a competitive coal sale and issue a lease to the successful bidder. The modified tract would be subject to standard and special lease stipulations developed for the PRB and that tract if it is offered for sale (Appendix D). Alternative 3 for the West Antelope LBA Tract assumes that ACC would be the successful bidder on the tract if a lease sale is held and that the tract would be mined as a maintenance lease for the Antelope Mine. Other assumptions would be the same as for the Proposed Action. Alternative 3 is the BLM's Preferred Alternative for the West Antelope LBA Tract.

Under this alternative for the West Antelope LBA Tract, BLM is considering removing some of the lands applied for in the northern portion of the West Antelope LBA Tract from consideration for leasing at this time and offering a smaller tract for competitive sale (Figure 2-5). The coal that BLM is considering removing from the tract as applied for could be combined with the unleased federal coal in this area to create a tract which could potentially have more competitive interest if it is leased in the future. The lands that BLM is considering removing from the tract are:

T.41N., R.71W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 28: Lots 1 through 8;  
332.50 acres

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Section 29: Lots 1 through 8, 12, and 13;

410.56 acres

Total:

733.06 acres

ACC estimates that these 733.06 acres contain approximately 91.6 million tons of in-place coal.

The legal description of the West Antelope LBA Tract under the BLM's Preferred Alternative is as follows:

### T.40N., R.71W., 6<sup>th</sup> P.M., Converse County, Wyoming

Section 3: Lots 15 through 18;

159.78 acres

Section 4: Lots 5 through 20;

487.25 acres

Section 5: Lots 5 through 7, 10 through 15, 19, and 20;

320.84 acres

Section 9: Lot 1;

40.14 acres

Section 10: Lots 3 and 4;

80.65 acres

### T.41N., R.71W., 6<sup>th</sup> P.M., Converse County, Wyoming

Section 28: Lots 9 through 16;

326.71 acres

Section 29: Lots 9 through 11, 14 through 16;

249.25 acres

Section 32: Lots 1 through 3, 6 through 11, 14 through 16;

486.16 acres

Section 33: Lots 1 through 16;

658.35 acres

Total:

2,809.13 acres

The Alternative 3 reconfiguration of the West Antelope LBA Tract, therefore, results in a tract comprising approximately 2,809.13 acres containing approximately 202.3 million tons of in-place coal, according to information provided by the applicant. After eliminating coal that would not be mined beneath Antelope Creek and the adjacent buffer zone, ACC estimates that the reconfigured tract includes approximately 2,022.1 mineable acres with approximately 183.2 million tons of mineable coal. Using ACC's projected recovery factor of 93 percent, the reconfigured tract would contain about 170.4 million tons of recoverable coal.

BLM will independently evaluate the volume and average quality of the coal resources included in each tract offered for sale as part of the fair market value determination process. The fact that the coal underlying Antelope Creek and the adjacent buffer zone will not be mined will be considered by BLM in the fair market value determination for the LBA tract. BLM's estimate of the mineable federal coal reserves and average quality of the coal included in each tract will be published in the sale notice for each tract that is offered for sale. Some general coal quality information in the area of the LBA tracts considered in this EIS is included in Section 3.3 of this document.

## **2.6 Alternatives Considered but Not Analyzed in Detail**

### **2.6.1 Alternative 4**

Under this alternative, as under the Proposed Action and Alternatives 2 and 3, the BLM would hold a separate, competitive, sealed-bid sale for the lands included in one or more of the LBA tracts. Alternative 4 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 one or more of the LBA tracts (NARO North, NARO South, Little Thunder, West Roundup, and West Antelope).

A company or companies acquiring this coal for one or more new stand-alone mines 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 new mining and reclamation plans. In addition, a company or companies acquiring this coal for one or more new start mines would have to compete for customers with established mines in a competitive market.

BLM currently estimates that a tract would potentially need to include as much as 500 to 600 million tons of coal in order to attract a buyer interested in opening a new mine in the Wyoming PRB. This is based on the assumptions that an operator

would construct facilities capable of producing 30 million tons per year to take advantage of the economies of scale offered by the coal deposits in the PRB and that 20 to 30 years of coal reserves would be needed to justify the expense of building the facilities described above. Given these assumptions, it is questionable whether most of the tracts under the Proposed Action or Alternatives 2 or 3 potentially include sufficient coal resources to support a new mine.

The potential difficulty in obtaining an air quality permit is another issue which could discourage new mine starts in the PRB. A new mine would create a new source of air quality impacts. As discussed in Chapter 3, the WDEQ/AQD administers a permitting program to assist the agency in managing the State's air resources. Under this program, anyone planning to construct, modify, or use a facility capable of emitting designated pollutants into the atmosphere must obtain an air quality permit to construct. Coal mines fall into this category.

In order to obtain a construction permit, an operator may be required to demonstrate that the proposed activities will not increase air pollutant levels above annual standards established by the Wyoming Air Quality Standards and Regulations (WDEQ/AQD 2000). Due to the current levels of mineral development (coal and oil and gas) in the Wyoming PRB, the Wyoming air quality standards have been exceeded several times recently in the southern PRB. Therefore, it may be difficult for

## 2.0 Proposed Action and Alternatives

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an operator planning on opening a new mine to demonstrate that new operations would not result in air pollution levels that are above annual Wyoming standards.

In view of the issues discussed above, development of new mines on one or more of the LBA tracts included in this EIS is considered unlikely and this alternative is not analyzed in detail.

The environmental impacts of developing one or more new mines to recover the coal resources in one or more of these LBA tracts would be greater than under the Proposed Action, the No Action Alternative, or Alternatives 2 or 3 because of the need for new facilities, new rail lines, new employment, and the creation of additional sources of particulates (dust). In the event that one or more lease sales are held and the applicants are not the successful bidders, the successful bidder or bidders would be required to submit detailed mining and reclamation plans for approval before any of the tracts could be mined, and this NEPA analysis would be reviewed and supplemented as necessary prior to approval of those mining and reclamation plans.

### 2.6.2 Alternative 5

Under Alternative 5, the BLM would delay the sale of one or more of the LBA tracts as applied for. Delaying the sale of one or more of the tracts would allow CBM resources to be more completely recovered prior to mining. Also, the prices received for

coal from the PRB have generally been decreasing in recent years. If coal lease sales are delayed until prices increase, the bonus and royalty payments to the government might be higher. Under this alternative, it is assumed that one or more of the tracts could be developed later as maintenance tracts or new start mines, depending on how long the sales were delayed.

CBM wells presently exist or are proposed on oil and gas leases inside or adjacent to the NARO North, NARO South, Little Thunder, West Roundup, and West Antelope LBA Tracts as proposed. If one or more of the LBA tracts included in this EIS are leased, mining cannot occur until the lessees have approved mining and reclamation permits and MLA mining plans, which generally takes several years. This would allow time for a large portion of the CBM resources to be recovered from the tracts.

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) federal and state royalties and taxes collected when the coal is sold. This alternative could potentially increase the fair market value of the coal resources in one or more of the LBA tracts, which could increase the bonus bid when the coal is leased. The price paid for coal from northeastern Wyoming decreased by more than \$1.00 per ton from 1992 to 2000, while production of low sulfur PRB coal increased annually. Prices

for PRB coal increased slightly in 2000 and 2001, and are projected to remain stable or increase slightly from 2002 through 2008 (WSGS 2003a). There is no assurance that delaying one or more of the sales would result in a higher coal price or a higher bonus bid.

The fair market value of these tracts and the resulting bonus payment to the government could increase if one or more lease sales are postponed and if PRB coal prices increase, but the postponement would not necessarily lead to higher royalty or tax income to the state or federal governments. Royalty and tax payments 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 is delayed, then by the time the coal is mined, the higher coal prices may or may not persist. If the higher coal prices do persist, they may enable the coal lessee to negotiate longer term contracts at higher prices, which would result in longer term, higher royalty and tax revenues. On the other hand, if the existing mining operations run 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 decrease 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 them similar to the Proposed Action and Action Alternatives.

The environmental impacts of mining the coal at a later time as part of one or more existing mines would be expected to be similar and about equal to the Proposed Action, Alternative 2, or Alternative 3. If new mine starts are required to recover the coal in these tracts, the environmental impacts would be expected to be greater than if the tracts were mined as extensions of existing mines.

## 2.7 Comparison of Alternatives

The locations of the Proposed Action and Alternatives 2 and 3 for the NARO North and NARO South, Little Thunder, West Roundup, and West Antelope LBA Tracts are shown on Figures 2-1 through 2-5, respectively. A summary comparison of projected coal production, surface disturbance, mine life, and federal and state revenues for the Proposed Action and Alternatives 1, 2, and 3 for NARO North and NARO South, Little Thunder, West Roundup, and West Antelope LBA Tracts are the presented in Tables 2-1 through 2-4, respectively.

Table 2-5 presents a comparative summary of the direct and indirect environmental impacts of implementing each alternative as compared to the No Action Alternative for all five LBA tracts. The No Action Alternative assumes completion of currently permitted mining at the North Antelope/Rochelle Complex for comparison to the NARO North and NARO South LBA Tracts, the currently permitted mining at the Black Thunder Mine for comparison to the Little Thunder LBA Tract, the currently permitted mining at the North Rochelle Mine for comparison to the West Roundup LBA Tract, and the currently permitted mining at the Antelope Mine for comparison to the West Antelope LBA Tract. Table 2-6 presents a comparative summary of cumulative environmental impacts of implementing each alternative for all five LBA tracts. The environmental consequences of the Proposed Action

and alternatives for each of the five LBA tracts are analyzed in Chapter 4.

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

Table 2-1. Summary Comparison of Coal Production, Surface Disturbance, Mine Life, and Revenues for NARO North and NARO South LBA Tracts and North Antelope/Rochelle Complex.

<b>Item</b>	<b>No Action Alternative (Existing North Antelope/Rochelle Complex)</b>	<b>Added by Proposed Action</b>	<b>Added by Alternative 2</b>	<b>Added by BLM's Preferred Alternative</b>	<b>Added by Alternative 3</b>
In-Place Coal (as of 1/1/03)	877.0 mmt	564.0 mmt	710.0 mmt	668.1 mmt	464.4 mmt
Recoverable Coal (as of 1/1/03) <sup>1</sup>	833.2 mmt	506.9 mmt	613.9 mmt	577.3 mmt	434.9 mmt
Coal Mined Through 2002	718 mmt	∞	∞	∞	∞
Lease Area <sup>2</sup>	14,895.50 ac	4,503.02 ac	5,571.19 ac	5,326.11	3,776.27 ac
Total Area to be Disturbed <sup>2</sup>	20,410 ac	6,700 ac	7,945 ac	7,700 ac	4,863 ac
Permit Area <sup>2</sup>	27,187 ac	21,035 ac	21,835 ac	21,835 ac	21,035 ac
Average Annual Post-2002 Coal Production	75 mmt	15 mmt	15 mmt	15 mmt	15 mmt
Maximum Annual Post-2002 Coal Production (years 2004-2006)	105 mmt	0 mmt	0 mmt	0 mmt	0 mmt
Remaining Life of Mine (post-2002)	11.0 yrs	5.0 yrs	6.0 yrs	5.5 yrs	4.0 yrs
Average No. of Employees (at maximum production rate)	1,175	10	10	10	10
Total Projected State Revenues (post-2002) <sup>3</sup>	\$ 916.5 million	\$ 557.6 million	\$ 675.3 million	\$ 635.0 million	\$ 478.4 million
Total Projected Federal Revenues (post-2002) <sup>4</sup>	\$ 686.8 million	\$ 421.8 million	\$ 514.4 million	\$ 483.7 million	\$ 359.4 million

<sup>1</sup> Assumes 95 percent recovery of leased coal (with the exception of the NARO South Tract as proposed, which is estimated to be 83 percent recovery of leased coal; the NARO South Alternative 2 Tract, which is estimated to be 79 percent recovery of leased coal; the NARO South Preferred Alternative Tract, which is estimated to be 78 percent recovery of leased coal; and NARO South Alternative 3 Tract, which is estimated to be 91 percent recovery of leased coal).

<sup>2</sup> For the Proposed Action and Alternatives, the disturbed acreage exceeds the leased acreage because of the need for highwall reduction, topsoil removal and other activities outside the lease boundaries. When added to the existing mine, 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. Permit areas under the Proposed Action, Preferred Alternative, and Alternatives 2 and 3 are the anticipated permit amendment baseline study areas.

<sup>3</sup> Projected revenue to the State of Wyoming is \$1.10 per ton of coal sold (UW 1994). Includes income from severance tax, property and production taxes, sales and use taxes, and Wyoming's share of federal royalty payments, bonus bids, and AML fees.

<sup>4</sup> Federal revenues are based on \$5.00 per ton price  $\Delta$  amount of recoverable coal  $\Delta$  federal royalty of 12.5 percent minus State's 50 percent share, plus \$0.35 per ton for AML fees  $\Delta$  amount of recoverable coal minus State's 50 percent share, plus \$5.00 per ton price  $\Delta$  amount of recoverable coal  $\Delta$  black lung tax of 4.0 percent, plus bonus payment on LBA leased coal of \$0.26 per ton (based on average of last 11 LBAs)  $\Delta$  amount of in-place coal minus State's 50 percent share.

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Table 2-2. Summary Comparison of Coal Production, Surface Disturbance, Mine Life, and Revenues for Little Thunder LBA Tract and Black Thunder Mine.

<b>Item</b>	<b>No Action Alternative (Existing Black Thunder Mine)</b>	<b>Added by Proposed Action</b>	<b>Added by Alternative 2 (BLM's Preferred Alternative)</b>	<b>Added by Alternative 3 (North Tract)</b>	<b>Added by Alternative 3 (South Tract)</b>
In-Place Coal (as of 1/1/03)	899.3 mmt	479.3 mmt	695.3 mmt	155.7 mmt	539.6 mmt
Recoverable Coal (as of 1/1/03) <sup>1</sup>	854.3 mmt	440.0 mmt	553.0 mmt	111.9 mmt	441.1 mmt
Coal Mined Through 2002	765 mmt	∞	∞	∞	∞
Lease Area <sup>2</sup>	12,772.90 ac	3,449.32 ac	5,083.50 ac	1,065.49 ac	4,018.01 ac
Total Area to be Disturbed <sup>2</sup>	18,476 ac	5,424 ac	6,577 ac	1,382 ac	5,195 ac
Permit Area <sup>2</sup>	21,238.0 ac	7,678.0 ac	7,678.0 ac	1,612.4 ac	6,065.6 ac
Average Annual Post-2002 Coal Production	37.1 mmt	5.4 mmt	5.4 mmt	5.4 mmt	5.4 mmt
Remaining Life of Mine (post-2002)	23.0 yrs	7.5 yrs	10.1 yrs	0 yrs	7.5 yrs
Average No. of Employees	580	0	0	0	0
Total Projected State Revenues (post-2002) <sup>3</sup>	\$ 939.7 million	\$ 484.0 million	\$ 608.3 million	\$ 123.1 million	\$ 485.2 million
Total Projected Federal Revenues (post-2002) <sup>4</sup>	\$ 704.2 million	\$ 364.8 million	\$ 470.6 million	\$ 97.2 million	\$ 373.4 million

<sup>1</sup> Assumes 95 percent recovery of leased coal for the No Action Alternative; 92 percent recovery of leased coal for Proposed Action; 79.5 percent recovery of leased coal for Alternative 2; 71.9 percent recovery of leased coal for Alternative 3, North Tract; and 81.8 percent recovery of leased coal for Alternative 3, South Tract.

<sup>2</sup> For the Proposed Action and Alternatives, the disturbed acreage exceeds the leased acreage because of the need for highwall reduction, topsoil removal and other activities outside the lease boundaries. When added to the existing mine, 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. Permit areas under the Proposed Action and Alternatives 2 and 3 are the anticipated permit amendment baseline study areas.

<sup>3</sup> Projected revenue to the State of Wyoming is \$1.10 per ton of coal sold (UW 1994). Includes income from severance tax, property and production taxes, sales and use taxes, and Wyoming's share of federal royalty payments, bonus bids, and AML fees.

<sup>4</sup> Federal revenues are based on \$5.00 per ton price Δ amount of recoverable coal Δ federal royalty of 12.5 percent minus State's 50 percent share, plus \$0.35 per ton for AML fees Δ amount of recoverable coal minus State's 50 percent share, plus \$5.00 per ton price Δ amount of recoverable coal Δ black lung tax of 4.0 percent, plus bonus payment on LBA leased coal of \$0.26 per ton (based on average of last 11 LBAs) Δ amount of in-place coal minus State's 50 percent share.

Table 2-3. Summary Comparison of Coal Production, Surface Disturbance, Mine Life, and Revenues for West Roundup LBA Tract and North Rochelle Mine.

<b>Item</b>	<b>No Action Alternative (Existing North Rochelle Mine)</b>	<b>Added by Proposed Action</b>	<b>Added by Alternative 2</b>	<b>Added by Alternative 3</b>	<b>Added by BLM's Preferred Alternative</b>
In-Place Coal (as of 1/1/03)	259.0 mmt	192.6 mmt	257.0 mmt	342.6 mmt	319.4 mmt
Recoverable Coal (as of 1/1/03) <sup>1</sup>	233.0 mmt	173.3 mmt	231.3 mmt	308.3 mmt	287.5 mmt
Coal Mined Through 2002	73.2 mmt	∞	∞	∞	∞
Lease Area <sup>2</sup>	3,443.50 ac	1,870.65 ac	2,652.69 ac	3,049.93 ac	2,812.51 ac
Total Area to be Disturbed <sup>2</sup>	5,288 ac	3,161 ac	3,161 ac	4,105 ac	3,865 ac
Permit Area <sup>2</sup>	7,042.0 ac	3,228.5 ac	3,228.5 ac	3,228.5 ac	3,228.5 ac
Average Annual Post-2002 Coal Production	35 mmt	0 mmt	0 mmt	0 mmt	0 mmt
Remaining Life of Mine (post-2002)	6.7 yrs	5.0 yrs	6.6 yrs	8.8 yrs	8.2 yrs
Average No. of Employees	250	150	150	150	150
Total Projected State Revenues (post-2002) <sup>3</sup>	\$ 256.3 million	\$ 190.6 million	\$ 254.4 million	\$ 339.1 million	\$ 316.3 million
Total Projected Federal Revenues (post-2002) <sup>4</sup>	\$ 193.9 million	\$ 144.2 million	\$ 192.4 million	\$ 256.5 million	\$ 239.2 million

<sup>1</sup> Assumes 90 percent recovery of leased coal.

<sup>2</sup> For the Proposed Action and Alternatives, the disturbed acreage exceeds the leased acreage because of the need for highwall reduction, topsoil removal and other activities outside the lease boundaries. When added to the existing mine, 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. Permit areas under the Proposed Action and Alternatives 2 and 3 are the anticipated permit amendment baseline study areas.

<sup>3</sup> Projected revenue to the State of Wyoming is \$1.10 per ton of coal sold (UW 1994). Includes income from severance tax, property and production taxes, sales and use taxes, and Wyoming's share of federal royalty payments, bonus bids, and AML fees.

<sup>4</sup> Federal revenues are based on \$5.00 per ton price Δ amount of recoverable coal Δ federal royalty of 12.5 percent minus State's 50 percent share, plus \$0.35 per ton for AML fees Δ amount of recoverable coal minus State's 50 percent share, plus \$5.00 per ton price Δ amount of recoverable coal Δ black lung tax of 4.0 percent, plus bonus payment on LBA leased coal of \$0.26 per ton (based on average of last 11 LBAs) Δ amount of in-place coal minus State's 50 percent share.

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Table 2-4. Summary Comparison of Coal Production, Surface Disturbance, Mine Life, and Revenues for West Antelope LBA Tract and Antelope Mine.

<b>Item</b>	<b>No Action Alternative (Existing Antelope Mine)</b>	<b>Added by Proposed Action</b>	<b>Added by Alternative 2</b>	<b>Added by Alternative 3 (BLM's Preferred Alternative)</b>
In-Place Coal (as of 1/1/03)	524.7 mmt	293.9 mmt	321.8 mmt	202.3 mmt
Mineable Coal (as of 1/1/03)	344.6 mmt	245.6 mmt	273.4 mmt	183.2 mmt
Recoverable Coal (as of 1/1/03) <sup>1</sup>	320.5 mmt	228.4 mmt	254.3 mmt	170.4 mmt
Coal Mined Through 2002	195.5 mmt	∞	∞	∞
Lease Area <sup>2</sup>	8,019.20 ac	3,542.19 ac	3,877.90 ac	2,809.13 ac
Total Area To Be Disturbed <sup>2</sup>	8,821.1 ac	3,200.0 ac	3,500.0 ac	2,467.0 ac
Permit Area <sup>2</sup>	10,848.6 ac	4,328.4 ac	4,328.4 ac	3,448.4 ac
Average Annual Post-2002 Coal Production	13.4 mmt	9.6 mmt	10.6 mmt	7.1 mmt
Remaining Life of Mine (post-2002)	24 yrs	0 yr	0 yr	0 yr
Average No. of Employees	265	0	0	0
Total Projected State Revenues (post-2002) <sup>3</sup>	\$ 379.1 million	\$ 251.2 million	\$ 279.7 million	\$ 187.4 million
Total Projected Federal Revenues (post-2002) <sup>4</sup>	\$ 288.6 million	\$ 195.2 million	\$ 216.7 million	\$ 143.4 million

<sup>1</sup> Assumes 93 percent recovery of leased coal remaining after eliminating coal that won't be mined beneath Antelope Creek and adjacent buffer zone.

<sup>2</sup> For the Proposed Action and Alternatives, the disturbed acreage is less than leased acreage because some of the coal is beneath Antelope Creek and the adjacent buffer zone and would not be mined, and because of the need for highwall reduction, topsoil removal and other activities outside the lease boundaries. When added to the existing mine, 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. Permit areas under the Proposed Action and Alternatives 2 and 3 are the anticipated permit amendment baseline study areas.

<sup>3</sup> Projected revenue to the State of Wyoming is \$1.10 per ton of coal sold (UW 1994). Includes income from severance tax, property and production taxes, sales and use taxes, and Wyoming's share of federal royalty payments, bonus bids, and AML fees.

<sup>4</sup> Federal revenues are based on \$5.00 per ton price Δ amount of recoverable coal Δ federal royalty of 12.5 percent minus State's 50 percent share, plus \$0.35 per ton for AML fees Δ amount of recoverable coal minus State's 50 percent share, plus \$5.00 per ton price Δ amount of recoverable coal Δ black lung tax of 4.0 percent, plus bonus payment on LBA leased coal of \$0.26 per ton (based on average of last 11 LBAs) Δ amount of in-place coal minus State's 50 percent share.

Table 2-5. Summary Comparison of Magnitude<sup>1</sup> and Duration of Direct and Indirect Impacts for the Proposed Action, Alternative 2, Alternative 3, and the No Action Alternative for the NARO North, NARO South, Little Thunder, West Roundup, and West Antelope LBA Tracts<sup>2</sup>.

<b>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</b>	<b>MAGNITUDE AND DURATION OF IMPACT</b>	
<b>RESOURCE NAME</b>	<b>NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 2, &amp; ALTERNATIVE 3</b>
<b>TOPOGRAPHY &amp; PHYSIOGRAPHY</b>		
<b>(Applicable to all five tracts)</b>		
TOPOGRAPHIC MODERATION could result in:		
Microhabitat reduction	Moderate, long term on existing mine areas	Same as No Action on expanded mine areas
Habitat diversity reduction	Moderate, long term on existing mine areas	Same as No Action on expanded mine areas
Reduction in water runoff and peak flows	Moderate, beneficial, long term on existing mine areas	Same as No Action on expanded mine areas
Increased precipitation infiltration	Moderate, beneficial, long term on existing mine areas	Same as No Action on expanded mine areas
Wildlife carrying capacity reduction	Moderate, long term on existing mine areas	Same as No Action on expanded mine areas
Reduction in erosion	Moderate, beneficial, long term on existing mine areas	Same as No Action on expanded mine areas
Enhanced vegetative productivity	Moderate, beneficial, long term on existing mine areas	Same as No Action on expanded mine areas
Potential acceleration of groundwater recharge	Moderate, beneficial, long term on existing mine areas	Same as No Action on expanded mine areas
<b>GEOLOGY AND MINERALS</b>		
<b>(Applicable to all five tracts)</b>		
SURFACE COAL MINING OPERATIONS would result in:		
Removal of coal	Moderate, permanent on existing mine areas	Same as No Action on expanded mine areas
Removal and replacement of topsoil and overburden	Moderate, long term on existing mine areas	Same as No Action on expanded mine areas
Physical characteristic alterations in geology	Moderate, permanent on existing mine areas	Same as No Action on expanded mine areas
Loss of CBM through venting and/or depletion of hydrostatic pressure	Moderate to substantial, permanent on existing mine areas	Same as No Action on expanded mine areas
Loss of access for sub-coal oil and gas development and production	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas
<b>SOILS</b>		
<b>(Applicable to all five tracts)</b>		
CHANGES IN PHYSICAL PROPERTIES would include:		
Increased near-surface bulk density and decreased soil infiltration rate	Moderate, long term on existing mine areas	Same as No Action on expanded mine areas
More uniformity in soil type, thickness, and texture	Moderate, beneficial, long term on existing mine areas	Same as No Action on expanded mine areas
Decreased soil loss due to topographic modification	Moderate, beneficial, long term on existing mine areas	Same as No Action on expanded mine areas

<sup>1</sup> Refer to Sections 4.0 and 4.1 for a discussion on magnitude of impacts.

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

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Table 2-5. Summary Comparison of Magnitude<sup>1</sup> and Duration of Direct and Indirect Impacts for the Proposed Action, Alternative 2, Alternative 3, and the No Action Alternative for the NARO North, NARO South, Little Thunder, West Roundup, and West Antelope LBA Tracts<sup>2</sup> (Continued).

<b>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</b>	<b>MAGNITUDE AND DURATION OF IMPACT</b>	
<b>RESOURCE NAME</b>	<b>NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 2, &amp; ALTERNATIVE 3</b>
<b>SOILS (Continued)</b>		
<b>(Applicable to all five tracts)</b>		
CHANGES IN CHEMICAL PROPERTIES would include:		
More uniform soil nutrient distribution	Moderate, beneficial, long term on existing mine areas	Same as No Action on expanded mine areas
CHANGES IN BIOLOGICAL PROPERTIES would include:		
Organic matter reduction	Moderate, long term on existing mine areas	Same as No Action on expanded mine areas
Microorganism population reduction	Moderate, long term on existing mine areas	Same as No Action on expanded mine areas
Reduction in organic matter in soils stockpiled before placement	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas
<b>AIR QUALITY</b>		
<b>(Applicable to all five tracts)</b>		
IMPACTS ASSOCIATED WITH MINING OPERATIONS would include:		
Elevated concentrations of particulate matter	Moderate, short term on existing mines and surrounding areas	Same as No Action on expanded mines and surrounding areas
Elevated concentrations of gaseous emissions	Moderate, short term on existing mines and surrounding areas	Same as No Action on expanded mines and surrounding areas
<b>WATER RESOURCES</b>		
<b>(Applicable to all five tracts)</b>		
<b>SURFACE WATER</b>		
CHANGES IN RUNOFF CHARACTERISTICS AND SEDIMENT DISCHARGE would include:		
Diversion and disruption of surface drainage systems	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas
Increased runoff and erosion rates on disturbed lands	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas
Increased infiltration on reclaimed lands due to topographic moderation	Moderate, beneficial, long term on existing mine areas	Same as No Action on expanded mine areas
Increased runoff on reclaimed lands due to loss of soil structure	Moderate, long term on existing mine areas	Same as No Action on expanded mine areas
Changes in peak flows downstream of mine permit area through use of sediment control structures	Moderate, long term for existing approved mining operations	Same as No Action on expanded mining operations

<sup>1</sup> Refer to Sections 4.0 and 4.1 for a discussion on magnitude of impacts.

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

Table 2-5. Summary Comparison of Magnitude<sup>1</sup> and Duration of Direct and Indirect Impacts for the Proposed Action, Alternative 2, Alternative 3, and the No Action Alternative for the NARO North, NARO South, Little Thunder, West Roundup, and West Antelope LBA Tracts<sup>2</sup> (Continued).

DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE	MAGNITUDE AND DURATION OF IMPACT	
	NO ACTION ALTERNATIVE	PROPOSED ACTION, ALTERNATIVE 2, & ALTERNATIVE 3
<b>WATER RESOURCES (Continued)</b>		
<b>(Applicable to all five tracts)</b>		
<u>GROUNDWATER</u>		
IMPACTS ASSOCIATED WITH MINING OPERATIONS would include:		
Removal of coal and overburden aquifers	Negligible, short term on existing mine areas	Same as No Action on expanded mine areas
Replacement of existing coal and overburden with unconsolidated backfill material	Negligible, long term on existing mine areas	Same as No Action on expanded mine areas
Depressed water levels in overburden and coal aquifers adjacent to mines	Moderate, short term on existing mines and surrounding areas	Same as No Action on expanded mines and surrounding areas
Change in hydraulic properties in backfilled areas	Negligible, long term on existing mine areas	Same as No Action on expanded mine areas
Change in groundwater quality in backfilled areas	Moderate, long term on existing mine areas	Same as No Action on expanded mine areas
Decrease in water supply for groundwater-right holders within the five-foot drawdown area for each mine	Moderate, long term on existing mines and surrounding areas	Same as No Action on expanded mines and surrounding areas
<b>ALLUVIAL VALLEY FLOORS</b>		
<b>(Applicable to all five tracts)</b>		
While final determinations have not been made by WDEQ/LQD, it is believed that there are no AVFs significant to agriculture on the proposed lease tracts	No impact on existing mine areas	Same as No Action on expanded mine areas
Removal and restoration of AVFs determined not to be significant to agriculture	Moderate, short term on existing leases	Same as No Action on expanded mine areas
<b>WETLANDS</b>		
<b>(Applicable to all five tracts)</b>		
Removal of jurisdictional wetlands	Moderate, short term on existing leases; jurisdictional wetlands would be replaced as required under Section 404 of the Clean Water Act	Same as No Action on expanded mine areas
Removal of non-jurisdictional wetlands	Moderate, short term to long term on existing leases; non-jurisdictional wetlands would be replaced as required by the surface land owner, USDA-FS, or WDEQ/LQD	Same as No Action on expanded mine areas

<sup>1</sup> Refer to Sections 4.0 and 4.1 for a discussion on magnitude of impacts.

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

2.0 Proposed Action and Alternatives

Table 2-5. Summary Comparison of Magnitude<sup>1</sup> and Duration of Direct and Indirect Impacts for the Proposed Action, Alternative 2, Alternative 3, and the No Action Alternative for the NARO North, NARO South, Little Thunder, West Roundup, and West Antelope LBA Tracts<sup>2</sup> (Continued).

<i>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</i>	<i>MAGNITUDE AND DURATION OF IMPACT</i>	
<b>RESOURCE NAME</b>	<b>NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 2, &amp; ALTERNATIVE 3</b>
<b>VEGETATION</b>		
<b>(Applicable to all five tracts)</b>		
PROGRESSIVE REMOVAL OF NATIVE VEGETATION during mining would result in:		
Increased erosion	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas
Wildlife and livestock habitat loss	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas
AFTER RECLAMATION the following could result:		
Changes in vegetation patterns	Negligible, long term on existing mine areas	Same as No Action on expanded mine areas
Reduction in vegetation diversity	Negligible, long term on existing mine areas	Same as No Action on expanded mine areas
Reduction in shrub density	Negligible, long term on existing mine areas	Same as No Action on expanded mine areas
Wildlife habitat carrying capacity loss	Moderate, long term on existing mine areas	Same as No Action on expanded mine areas
<b>WILDLIFE</b>		
<b>(Applicable to all five tracts)</b>		
DURING MINING the following could occur:		
Wildlife displacement and increased competition on adjacent undisturbed or reclaimed lands	Moderate, short term on existing mines and adjacent areas	Same as No Action on expanded mines and adjacent areas
Restriction of wildlife movement, especially big game	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas
Increased mortality rate to small mammals	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas
Temporary displacement of small and medium-sized mammals	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas
Disturbance of active sage grouse leks	Moderate, short term on existing lease for North Antelope/Rochelle Complex	No impact on expanded mine areas
Disturbance of inactive sage grouse leks	Moderate, short term on existing leases for North Antelope/Rochelle Complex and Black Thunder Mine	No impact on expanded mine areas
Disturbance of sage grouse nesting habitat	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas
Abandonment of raptor nests	Negligible, short term on existing mine areas	Same as No Action on expanded mine areas
Foraging habitat reduction for raptors	Negligible, short term on existing mine areas	Same as No Action on expanded mine areas
Loss of nesting and foraging habitat for Migratory Birds of Management Concern	Negligible, short term on existing mine areas	Same as No Action on expanded mine areas
Reduction in waterfowl resting and feeding habitat	Negligible, short term on existing mine areas	Same as No Action on expanded mine areas
Reduction in habitat for aquatic species	Negligible, short term on existing mine areas	Same as No Action on expanded mine areas
Wildlife habitat loss	Negligible, short term on existing mine areas	Same as No Action on expanded mine areas
Road kills by mine-related traffic	Negligible, short term on existing mine areas	Same as No Action on expanded mine areas
Reduction in habitat carrying capacity and habitat diversity on reclaimed lands	Moderate, long term on existing mine areas	Same as No Action on expanded mine areas

<sup>1</sup> Refer to Sections 4.0 and 4.1 for a discussion on magnitude of impacts.

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

Table 2-5. Summary Comparison of Magnitude<sup>1</sup> and Duration of Direct and Indirect Impacts for the Proposed Action, Alternative 2, Alternative 3, and the No Action Alternative for the NARO North, NARO South, Little Thunder, West Roundup, and West Antelope LBA Tracts<sup>2</sup> (Continued).

<i>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</i>	<i>MAGNITUDE AND DURATION OF IMPACT</i>	
<b>RESOURCE NAME</b>	<b>NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 2, &amp; ALTERNATIVE 3</b>
<b>THREATENED, ENDANGERED, PROPOSED, AND CANDIDATE SPECIES</b>		
<b>(NARO North-See Appendix G)</b>		
Black-footed ferrets	As determined by previous consultation with USFWS for all species	No effect
Bald eagle		May affect, not likely to adversely affect
Ute Ladies'-tresses		May affect, not likely to adversely affect
Mountain plover		May affect, not likely to jeopardize
Black-tailed prairie dog		No effect
<b>(NARO South-See Appendix G)</b>		
Black-footed ferrets	As determined by previous consultation with USFWS for all species	No effect
Bald eagle		May affect, not likely to adversely affect
Ute Ladies'-tresses		May affect, not likely to adversely affect
Mountain plover		May affect, not likely to jeopardize
Black-tailed prairie dog		Would affect individuals and populations
<b>(Little Thunder-See Appendix H)</b>		
Black-footed ferrets	As determined by previous consultation with USFWS for all species	No effect
Bald eagle		May affect, not likely to adversely affect
Ute Ladies'-tresses		May affect, not likely to adversely affect
Mountain plover		May affect, not likely to jeopardize
Black-tailed prairie dog		Would affect individuals and populations
<b>(West Roundup-See Appendix I)</b>		
Black-footed ferrets	As determined by previous consultation with USFWS for all species	No effect
Bald eagle		May affect, not likely to adversely affect
Ute Ladies'-tresses		May affect, not likely to adversely affect
Mountain plover		May affect, not likely to jeopardize
Black-tailed prairie dog		No effect under Proposed Action; would affect individuals and populations under Alternatives 2 & 3
<b>(West Antelope-See Appendix J)</b>		
Black-footed ferrets	As determined by previous consultation with USFWS for all species	No effect
Bald eagle		May affect, not likely to adversely affect
Ute Ladies'-tresses		May affect, not likely to adversely affect
Mountain plover		May affect, not likely to jeopardize
Black-tailed prairie dog		Would affect individuals and populations

<sup>1</sup> Refer to Sections 4.0 and 4.1 for a discussion on magnitude of impacts.

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

2.0 Proposed Action and Alternatives

Table 2-5. Summary Comparison of Magnitude<sup>1</sup> and Duration of Direct and Indirect Impacts for the Proposed Action, Alternative 2, Alternative 3, and the No Action Alternative for the NARO North, NARO South, Little Thunder, West Roundup, and West Antelope LBA Tracts<sup>2</sup> (Continued).

<b>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</b>	<b>MAGNITUDE AND DURATION OF IMPACT</b>	
	<b>NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 2, &amp; ALTERNATIVE 3</b>
<b>LAND USE AND RECREATION</b>		
<b>(Applicable to all five tracts)</b>		
ENVIRONMENTAL CONSEQUENCES ON LAND USE would be:		
Reduction of livestock grazing	Moderate, long term on existing mine areas	Same as No Action on expanded mine areas
Loss of wildlife habitat	Moderate, long term on existing mine areas	Same as No Action on expanded mine areas
Loss of access for sub-coal oil and gas development	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas
Loss of CBM reserves through venting and/or reduction in hydrostatic pressure	Moderate, permanent on existing mine areas	Same as No Action on expanded mine areas
Removal of existing oil and gas production facilities	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas
Loss of access to public land available for recreation activities	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas
<b>CULTURAL RESOURCES</b>		
<b>(NARO North and NARO South)</b>		
75 sites not eligible or recommended not eligible for NRHP	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 areas
4 eligible for NRHP		
<b>(Little Thunder)</b>		
34 sites not eligible or recommended not eligible for NRHP	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
None eligible for NRHP		
<b>(West Roundup)</b>		
30 sites not eligible or recommended not eligible for NRHP	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
None eligible for NRHP		
<b>(West Antelope)</b>		
49 sites not eligible or recommended not eligible for NRHP	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
4 eligible for NRHP		
<b>(Applicable to all five tracts)</b>		
Potential increase in vandalism	No impacts on existing mine areas	Negligible on expanded mine areas
Potential increase in unauthorized collecting	No impacts on existing mine areas	Negligible on expanded mine areas

<sup>1</sup> Refer to Sections 4.0 and 4.1 for a discussion on magnitude of impacts.

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

Table 2-5. Summary Comparison of Magnitude<sup>1</sup> and Duration of Direct and Indirect Impacts for the Proposed Action, Alternative 2, Alternative 3, and the No Action Alternative for the NARO North, NARO South, Little Thunder, West Roundup, and West Antelope LBA Tracts<sup>2</sup> (Continued).

<b>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</b>	<b>MAGNITUDE AND DURATION OF IMPACT</b>	
	<b>NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 2, &amp; ALTERNATIVE 3</b>
<b>NATIVE AMERICAN CONCERNS</b> (Applicable to all five tracts)	No impact identified on existing mine areas	Same as No Action on expanded mine areas
<b>PALEONTOLOGICAL RESOURCES</b> (Applicable to all five tracts) Overburden removal could expose fossils for scientific examination	Disturbance of USDA-FS classified Class 3 and Class 5 formations on existing mine areas	Same as No Action on expanded mine areas
<b>VISUAL RESOURCES</b> (Applicable to all five tracts) EVIDENT IMPACTS DURING MINING would include: Alteration of landscape by mining facilities and operations	Moderate, short term on existing mine areas	Same as No Action on expanded mine areas
IMPACTS FOLLOWING RECLAMATION would include: Smoother sloped terrain Reduction in sagebrush density	Negligible, long term on existing mine areas Negligible, short to long term on existing mine areas	Same as No Action on expanded mine areas Same as No Action on expanded mine areas
<b>NOISE</b> (NARO North and NARO South) INCREASED NOISE LEVELS could affect: Occupied dwellings within one mile	Moderate to substantial, short term on existing mine area	Same as No Action on expanded mine areas
<b>(Little Thunder)</b> INCREASED NOISE LEVELS could affect: Occupied dwellings within one mile	Moderate to substantial, short term on existing mine area	Same as No Action on expanded mine area
<b>(West Roundup)</b> INCREASED NOISE LEVELS could affect: Occupied dwellings within one mile	None for existing mine area	Same as No Action on expanded mine area
<b>(West Antelope)</b> INCREASED NOISE LEVELS could affect: Occupied dwellings within one mile	None for existing mine area	Same as No Action on expanded mine area

<sup>1</sup> Refer to Sections 4.0 and 4.1 for a discussion on magnitude of impacts.

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

2.0 Proposed Action and Alternatives

Table 2-5. Summary Comparison of Magnitude<sup>1</sup> and Duration of Direct and Indirect Impacts for the Proposed Action, Alternative 2, Alternative 3, and the No Action Alternative for the NARO North, NARO South, Little Thunder, West Roundup, and West Antelope LBA Tracts<sup>2</sup> (Continued).

<b>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</b>	<b>MAGNITUDE AND DURATION OF IMPACT</b>	
	<b>NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 2, &amp; ALTERNATIVE 3</b>
<b>NOISE (Continued)</b> <b>(Applicable to all five tracts)</b> INCREASED NOISE LEVELS could affect: Wildlife in immediate vicinity	Negligible, short term on existing mine areas	Same as No Action on expanded mine areas
<b>TRANSPORTATION FACILITIES</b> <b>(NARO North and NARO South)</b> Use of railroads to ship coal	Moderate, for duration of existing approved mining operations	Same as No Action for additional 4 to 6 years
Employee and service contractor use of highways to and from mine sites	Moderate, for duration of existing approved mining operations	Same as No Action for additional 4 to 6 years
<b>(Little Thunder)</b> Use of railroad to ship coal	Moderate, for duration of existing approved mining operations	Same as No Action for additional 0.3 to 10.1 years
Employee and service contractor use of highways to and from mine sites	Moderate for duration of existing approved mining operations	Same as No Action for additional 0.3 to 10.1 years
<b>(West Roundup)</b> Use of railroads to ship coal	Moderate for duration of existing approved mining operations	Same as No Action for additional 5.0 to 8.2 years
Employee and service contractor use of highways to and from mine sites	Moderate, for duration of existing approved mining operations	Same as No Action for additional 5.0 to 8.2 years
<b>(West Antelope)</b> Use of railroads to ship coal	Moderate, for duration of existing approved mining operations	Same as No Action on expanded mine area
Employee and service contractor use of highways to and from mine sites	Moderate, for duration of existing approved mining operations	Same as No Action on expanded mine area
<b>(Applicable to all five tracts)</b> Relocation of pipelines Relocation of utility lines	Negligible, short term on expanded mine areas Short term on expanded mine areas	Same as No Action on expanded mine area Same as No Action on expanded mine area

<sup>1</sup> Refer to Sections 4.0 and 4.1 for a discussion on magnitude of impacts.

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

Table 2-5. Summary Comparison of Magnitude<sup>1</sup> and Duration of Direct and Indirect Impacts for the Proposed Action, Alternative 2, Alternative 3, and the No Action Alternative for the NARO North, NARO South, Little Thunder, West Roundup, and West Antelope LBA Tracts<sup>2</sup> (Continued).

DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE	MAGNITUDE AND DURATION OF IMPACT	
	NO ACTION ALTERNATIVE	PROPOSED ACTION, ALTERNATIVE 2, & ALTERNATIVE 3
<b>SOCIOECONOMICS</b>		
<b>(NARO North and NARO South)</b>		
EFFECTS DURING MINING would include:		
Employment	Moderate, beneficial short term for existing approved mining operations	10 potential additional jobs on expanded mine area
<b>(Little Thunder and West Antelope)</b>		
EFFECTS DURING MINING would include:		
Employment	Moderate, beneficial short term for existing approved mining operations	Same as No Action on expanded mine area, no additional jobs on expanded mine area are anticipated
<b>(West Roundup)</b>		
EFFECTS DURING MINING would include:		
Employment	Moderate, beneficial short term for existing approved mining operations	150 potential additional jobs on expanded mine area
<b>(Applicable to all five tracts)</b>		
EFFECTS DURING MINING would include:		
Revenues from royalties and taxes to the state and local government	Moderate, beneficial short term on existing mine areas	Same as No Action on expanded mine areas
Revenues from royalties and taxes to the federal government	Moderate, beneficial short term on existing mine areas	Same as No Action on expanded mine areas
Economic development	Moderate, beneficial short term on existing mine areas	Same as No Action on expanded mine areas
Population increases in Campbell and Converse Counties and resulting housing and infrastructure needs	No new impact related to existing mine areas	Same as No Action on Expanded mine areas

<sup>1</sup> Refer to Sections 4.0 and 4.1 for a discussion on magnitude of impacts.

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

2.0 Proposed Action and Alternatives

Table 2-6. Summary Comparison of Magnitude and Duration of Cumulative Impacts<sup>1, 2</sup>.

<b>RESOURCE NAME</b>	<b>MAGNITUDE TYPE AND DURATION OF IMPACT</b>	
	<b>NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 2, &amp; ALTERNATIVE 3</b>
<b>TOPOGRAPHY &amp; PHYSIOGRAPHY</b>		
Topographic moderation following coal removal and reclamation on federal coal leases.	Moderate, long term impacts on approximately 1.9 percent of Campbell and Converse Counties.	Same as No Action on approximately 2.2 percent of Campbell and Converse Counties.
Overlapping impacts to topography caused by surface coal mining and CBM development on and adjacent to surface coal mines.	Negligible, short term on area leased for federal coal.	Same as No Action on expanded coal lease area.
<b>GEOLOGY AND MINERALS</b>		
Recovery of coal would result in: Overburden and coal removal and replacement of overburden and topsoil on federal coal leases.	Moderate, long term to permanent impacts on approximately 1.9 percent of Campbell and Converse Counties.	Same as No Action on 2.2 percent of Campbell and Converse Counties.
Loss of CBM resource through venting and/or depletion of hydrostatic pressure.	Moderate to substantial on shallowest coal reserves located near Wyodak coal outcrop area.	Same as No Action on additional 16,000 acres of coal reserves.
Loss of access for oil and gas development on federal coal leases.	Moderate, short term on approximately 1.9 percent of Campbell and Converse Counties.	Same as no Action on approximately 2.2 percent of Campbell and Converse Counties.
<b>SOILS</b>		
Disturbance of soil and associated physical and chemical changes to soil resource on federal coal leases.	Moderate, long term impacts related to coal removal from approximately 1.9 percent of Campbell and Converse Counties combined with more widespread, less intensive impacts related to CBM development and power plant and railroad construction.	Same as No Action related to coal removal from approximately 2.2 percent of Campbell and Converse Counties combined with more widespread, less intensive impacts related to CBM development and power plant and railroad construction.

<sup>1</sup> Refer to Section 4.5 for a discussion of cumulative impacts.

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

Table 2-6. Summary Comparison of Magnitude and Duration of Cumulative Impacts<sup>1, 2</sup> (Continued).

DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE	MAGNITUDE TYPE AND DURATION OF IMPACT	
	RESOURCE NAME	NO ACTION ALTERNATIVE
<b>AIR QUALITY</b>		
Cumulative impacts associated with mining operations and Wyoming PRB Oil and Gas Project EIS Alternative 1 and Montana Statewide Oil and Gas EIS Alternative E would include: Cumulative near-field concentrations of criteria pollutants.	Above PSD Class II increment for PM <sub>10</sub> 24-hour. Concentrations of other pollutants below increments.	Same as No Action on expanded mine areas.
Cumulative far-field concentrations of NO <sub>2</sub> annual.	Above PSD Class I increment in Northern Cheyenne Reservation. Concentrations in other areas are below increments.	Same as No Action on expanded mine areas.
Cumulative far-field concentrations of PM <sub>10</sub> 24-hour.	Above PSD Class I increment in Northern Cheyenne Reservation and Washakie Wilderness. Concentrations in other areas are below increments.	Same as No Action on expanded mine areas.
Cumulative visibility impacts in mandatory Class I areas.	Potential impacts range from three days above 1.0 dV at Red Rock Lakes Wilderness to 32 days above 1.0 dV at Wind Cave National Park. Potential maximum deciview change is 29.0 dV at U.L. Bend Wilderness.	Same as No Action on expanded mine areas.
Acidification of sensitive lakes.	Potential impacts are 180.0 percent of the level of acceptable change (LAC) in Upper Frozen Lake and 10.4 percent of the LAC in Florence Lake. Impacts at other lakes are below the LAC.	Same as No Action on expanded mine areas.

<sup>1</sup> Refer to Section 4.5 for a discussion of cumulative impacts.

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

2.0 Proposed Action and Alternatives

Table 2-6. Summary Comparison of Magnitude and Duration of Cumulative Impacts<sup>1, 2</sup> (Continued).

DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE	MAGNITUDE TYPE AND DURATION OF IMPACT	
	RESOURCE NAME	NO ACTION ALTERNATIVE
<b>WATER RESOURCES</b>		
<u>SURFACE WATER</u>		
Mining disturbance of Cheyenne River drainage basin.	Disruption and diversions affecting approximately 4.0 percent of drainage basin during mining and reclamation.	Same as No Action affecting approximately 6.0 percent of drainage basin during mining and reclamation.
Offsetting changes in surface flow amounts due to overlapping development of coal and CBM resource.	Negligible, short term, potentially beneficial on existing mine areas.	Same as No Action on expanded mine areas.
<u>GROUNDWATER</u>		
Overlapping drawdown in the coal and alluvial aquifers between surface coal mines.	Moderate, long term for existing mine areas.	Same as No Action for expanded mine areas.
Overlapping drawdown in the coal aquifer caused by surface mining and CBM development.	Additive, long term in area immediately west of surface coal mines.	Same as No Action for expanded mine areas.
Water-level decline in the sub-coal aquifers as a result of all development.	No cumulative impacts anticipated.	Same as No Action for expanded mine areas.
Change in groundwater quality as a result of all development.	No cumulative impacts anticipated.	Same as No Action on expanded mine areas.
<b>ALLUVIAL VALLEY FLOORS</b>	No cumulative impacts anticipated on existing mine areas, AVFs disturbed by mining would be replaced.	Same as No Action on expanded mine areas.
<b>WETLANDS</b>		
Removal of jurisdictional wetlands.	Incremental, not additive, short term on existing leases, jurisdictional wetlands would be replaced as required under Section 404 of the Clean Water Act.	Same as No Action on expanded mine areas.

<sup>1</sup> Refer to Section 4.5 for a discussion of cumulative impacts.

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

Table 2-6. Summary Comparison of Magnitude and Duration of Cumulative Impacts<sup>1, 2</sup> (Continued).

<i>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</i>	<i>MAGNITUDE TYPE AND DURATION OF IMPACT</i>	
<b>RESOURCE NAME</b>	<b>NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 2, &amp; ALTERNATIVE 3</b>
<b>WETLANDS (continued)</b> Removal of non-jurisdictional wetlands.	Incremental, not additive, short term to long term on existing leases, non-jurisdictional wetlands would be replaced as required by the surface landowner, USDA-FS, or WDEQ/LQD.	Same as No Action on expanded mine areas.
<b>VEGETATION</b> Removal and replacement of native vegetation/ Changes in vegetation patterns and diversity/ Wildlife habitat carrying capacity loss/ Potential for invasion by weedy non-native species.	Moderate, short to long term impacts related to coal removal from approximately 1.9 percent of Campbell and Converse Counties and replacement with approved seed mixtures combined with less concentrated impacts related to CBM development and power plant and railroad construction.	Same as No Action related to coal removal from approximately 2.2 percent of Campbell and Converse Counties combined with less concentrated impacts related to CBM development and power plant and railroad construction.
<b>WILDLIFE</b> Disturbance of yearlong and winter/yearlong pronghorn habitat/ Disturbance of mule deer and white-tailed deer winter and winter/yearlong habitat/ Reduction in raptor nesting and foraging habitat/ Disturbance of sage grouse leks and nesting habitat.	Moderate, short to long term impacts related to coal removal from approximately 1.9 percent of Campbell and Converse Counties combined with less concentrated impacts related to CBM development and power plant and railroad construction.	Same as No Action related to coal removal from approximately 2.2 percent of Campbell and Converse Counties.
Disturbance of elk habitat/ Disturbance of nesting and foraging habitat for Migratory Birds of Management Concern.	Habitat for these species is limited in the surface coal mining area. Minor, short to long term impacts related to coal removal from approximately 1.9 percent of Campbell and Converse Counties combined with less concentrated impacts related to CBM development and power plant and railroad construction.	Same as No Action related to coal removal from approximately 2.2 percent of Campbell and Converse Counties.

<sup>1</sup> Refer to Section 4.5 for a discussion of cumulative impacts.

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

2.0 Proposed Action and Alternatives

Table 2-6. Summary Comparison of Magnitude and Duration of Cumulative Impacts<sup>1, 2</sup> (Continued).

<i>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</i>	<i>MAGNITUDE TYPE AND DURATION OF IMPACT</i>	
<b>RESOURCE NAME</b>	<b>NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 2, &amp; ALTERNATIVE 3</b>
<b>WILDLIFE (continued)</b>		
Disturbance of waterfowl habitat/ Disturbance of habitat for aquatic species.	Habitat for these species is limited in the surface coal mining area. Minor, short to long term impacts related to coal removal from approximately 1.9 percent of Campbell and Converse Counties combined with more widespread impacts related to CBM development and power plant and railroad construction.	Same as No Action related to coal removal from approximately 2.2 percent of Campbell and Converse Counties.
Reduction in wildlife habitat diversity following reclamation/ Reduction in carrying capacity for some species following reclamation.	Moderate, long term impacts related to coal removal from approximately 1.9 percent of Campbell and Converse Counties combined with less concentrated impacts related to CBM development and power plant and railroad construction.	Same as No Action related to coal removal from approximately 2.2 percent of Campbell and Converse Counties.
<b>THREATENED, ENDANGERED, PROPOSED, AND CANDIDATE SPECIES</b>		
See Appendices G through J.	Individuals of some T&E species will potentially be directly affected by mining operations on the existing leases, impacts may overlap with other developments on adjacent lands.	Same as No Action on expanded mine areas.
<b>LAND USE AND RECREATION</b>		
Loss of agricultural production/ Reduction of wildlife habitat.	Moderate, short to long term impacts related to coal removal from approximately 1.9 percent of Campbell and Converse Counties combined with less concentrated impacts related to CBM development and power plant and railroad construction.	Same as No Action related to coal removal from approximately 2.2 percent of Campbell and Converse Counties.

<sup>1</sup> Refer to Section 4.5 for a discussion of cumulative impacts.

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise

Table 2-6. Summary Comparison of Magnitude and Duration of Cumulative Impacts<sup>1, 2</sup> (Continued).

<b>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</b>	<b>MAGNITUDE TYPE AND DURATION OF IMPACT</b>		
	<b>RESOURCE NAME</b>	<b>NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 2, &amp; ALTERNATIVE 3</b>
<b>LAND USE AND RECREATION (continued)</b>			
Disruption of oil and gas development/production and removal of existing oil and gas production facilities.	Moderate to substantial, short term on existing mine areas.	Same as No Action on expanded mine areas.	
Loss of access to lands used for recreation, particularly hunting.	Moderate, short term on existing mine areas.	Same as No Action on expanded mine areas.	
<b>CULTURAL RESOURCES</b>			
Increased vandalism related to increase population and access/ Unintentional disturbance of cultural sites.	Moderate, permanent losses related to coal removal from approximately 1.9 percent of Campbell and Converse Counties combined with less concentrated impacts related to CBM development and power plant and railroad construction. Cultural sites eligible for the NRHP would be mitigated on mine areas. Ineligible sites may be destroyed.	Same as No Action related to coal removal from approximately 2.2 percent of Campbell and Converse Counties.	
<b>NATIVE AMERICAN CONCERNS</b>	No impact identified on existing mine areas.	Same as No Action on expanded mine areas.	
<b>PALEONTOLOGICAL RESOURCES</b>			
Loss of plant, invertebrate and vertebrate fossil material due to surface-disturbing activities, unauthorized collection, and vandalism.	Moderate, permanent losses related to coal removal from approximately 1.9 percent of Campbell and Converse Counties combined with less concentrated impacts related to CBM development and power plant and railroad construction. Cultural sites eligible for the NRHP would be mitigated on mine areas. Ineligible sites may be destroyed.	Same as No Action on related to coal removal from approximately 2.2 percent of Campbell and Converse Counties.	

<sup>1</sup> Refer to Section 4.5 for a discussion of cumulative impacts.

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

2.0 Proposed Action and Alternatives

Table 2-6. Summary Comparison of Magnitude and Duration of Cumulative Impacts<sup>1, 2</sup> (Continued).

<i>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</i>	<i>MAGNITUDE TYPE AND DURATION OF IMPACT</i>	
<b>RESOURCE NAME</b>	<b>NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 2, &amp; ALTERNATIVE 3</b>
<b>VISUAL RESOURCES</b> Impacts on visual resources.	Moderate, short term related to coal removal from approximately 1.9 percent of Campbell and Converse Counties combined with less concentrated impacts related to CBM development and power plant and railroad construction.	Same as No Action related to coal removal from approximately 2.2 percent of Campbell and Converse Counties.
<b>NOISE</b>	No cumulative impacts anticipated.	Same as No Action.
<b>TRANSPORTATION FACILITIES</b> Continued use of existing transportation facilities and construction of new facilities.	Moderate, short term related to coal removal from approximately 1.9 percent of Campbell and Converse Counties combined with impacts related to CBM development and power plant and railroad construction.	Same as No Action related to coal removal from approximately 2.2 percent of Campbell and Converse Counties.
<b>SOCIOECONOMICS</b> Revenues from royalties and taxes to the state and local government.	Significant, short term, beneficial related to coal removal from approximately 1.9 percent of Campbell and Converse Counties combined with impacts related to CBM development and power plant and railroad construction.	Same as No Action related to coal removal from approximately 2.2 percent of Campbell and Converse Counties.
Revenues from royalties and taxes to the federal government.	Moderate, short term, beneficial related to coal removal from approximately 1.9 percent of Campbell and Converse Counties combined with impacts related to CBM development and power plant and railroad construction.	Same as No Action related to coal removal from approximately 2.2 percent of Campbell and Converse Counties.

<sup>1</sup> Refer to Section 4.5 for a discussion of cumulative impacts.

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

Table 2-6. Summary Comparison of Magnitude and Duration of Cumulative Impacts<sup>1, 2</sup> (Continued).

<i>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</i>	<i>MAGNITUDE TYPE AND DURATION OF IMPACT</i>	
<b>RESOURCE NAME</b>	<b>NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 2, &amp; ALTERNATIVE 3</b>
<b>SOCIOECONOMICS (continued)</b>		
Employment	Moderate, short term, beneficial related to coal removal from approximately 1.9 percent of Campbell and Converse Counties combined with impacts related to CBM development and power plant and railroad construction.	Same as No Action related to coal removal from approximately 2.2 percent of Campbell and Converse Counties.
Population increases in Campbell and Converse Counties and resulting housing and infrastructure needs.	Moderate, short term, related to coal removal from approximately 1.9 percent of Campbell and Converse Counties combined with impacts related to CBM development and power plant and railroad construction.	Same as No Action for coal removal from approximately 2.2 percent of Campbell and Converse Counties.

<sup>1</sup> Refer to Section 4.5 for a discussion of cumulative impacts.

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

## *2.0 Proposed Action and Alternatives*

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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 judgment 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.