

**SOUTH GILLETTE AREA COAL LEASE APPLICATIONS
DRAFT ENVIRONMENTAL IMPACT STATEMENT**

Prepared by

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Under the Direction of

**U.S. Department of the Interior
Bureau of Land Management
High Plains District Office
Casper, Wyoming**

and

Cooperating Agencies

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

and

**Wyoming Department of Environmental Quality
Cheyenne, Wyoming**

and

**Wyoming Department of Transportation
Sheridan, and Cheyenne, Wyoming**

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EXECUTIVE SUMMARY

On July 6, 2004, RAG Coal West, Inc. (RAG)¹ filed an application with the Bureau of Land Management (BLM) to lease federal coal reserves in a tract north of and immediately adjacent to the Belle Ayr Mine in Campbell County, Wyoming, approximately 10 miles south-southeast of Gillette (Figures ES-1 and ES-2). The tract, which was originally referred to as the Belle Ayr Mine North Extension Lease by Application (LBA) Tract, was assigned case file number WYW161248. The federal coal reserves were applied for as a maintenance tract for the Belle Ayr Mine. BLM subsequently renamed the tract the Belle Ayr North LBA Tract.

In August 2004, RAG finalized the sale of the Belle Ayr Mine to Foundation Coal West (FCW), a directly held subsidiary of Foundation Coal Holdings, Inc. In this EIS, the applicant for the Belle Ayr North LBA Tract will be referred to as FCW.

On February 10, 2006, Ark Land Company (ALC) filed an application with BLM to lease the federal coal reserves in a tract west of and immediately adjacent to the Coal Creek Mine in Campbell County, Wyoming, approximately 25 miles south-southeast of Gillette (Figures ES-1 and ES-3). The tract, which is referred to as the West Coal Creek LBA Tract, was assigned case number WYW172585. The federal coal reserves were applied for as a maintenance tract for the Coal Creek Mine. ALC is a wholly owned subsidiary of Arch Coal, Inc. The Coal Creek Mine is operated by Thunder Basin Coal Company (TBCC), a subsidiary of Arch Western Resources, LLC. In this EIS, ALC is referred to as the applicant and TBCC is referred to in discussions of mine operations.

On March 15, 2006, Caballo Coal Company (CCC) filed an application with BLM to lease the federal coal included in a tract located west of and immediately adjacent to the Caballo Mine in Campbell County, Wyoming, approximately 8 miles south-southeast of Gillette (Figures ES-1 and ES-4). The tract, which is referred to as the Caballo West LBA Tract, was assigned case number WYW172657. The federal coal reserves were applied for as a maintenance tract for the Caballo Mine. CCC is a directly held subsidiary of Peabody Holding Company, Inc., which in turn is a directly held subsidiary of Peabody Energy Corporation.

On September 1, 2006, Cordero Mining Company (CMC) filed an application with BLM to lease the federal coal included in a tract west and south of and immediately adjacent to the Cordero Rojo Mine in Campbell County, Wyoming, approximately 15 miles south-southeast of Gillette (Figures ES-1 and ES-5). The tract, which is referred to as the Maysdorf II LBA Tract, was assigned case number WYW173360. The federal coal reserves were applied for as a maintenance tract for the Cordero Rojo Mine, which is operated by CMC, a

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

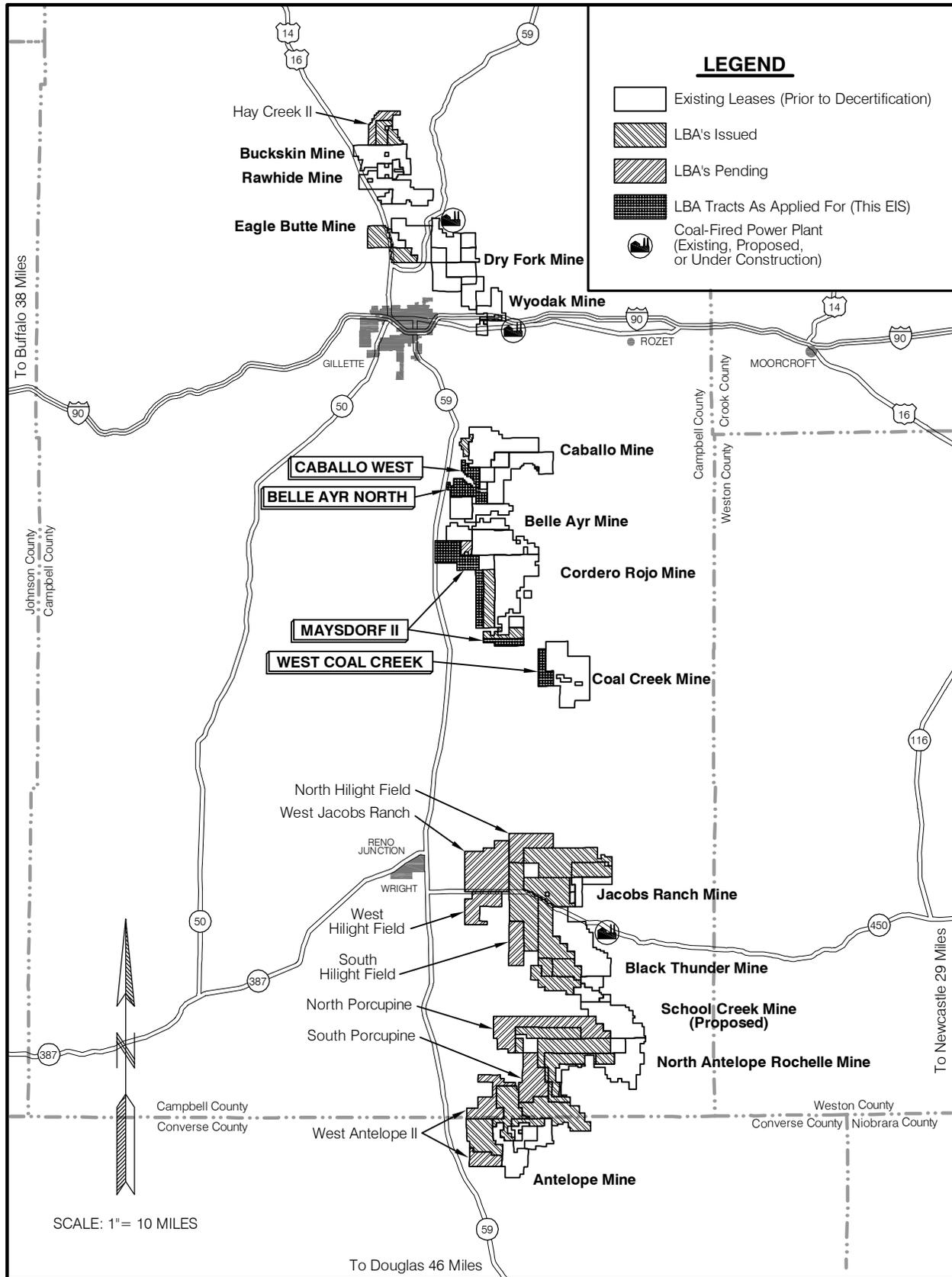


Figure ES-1. General Location Map with Federal Coal Leases and LBA Tracts.

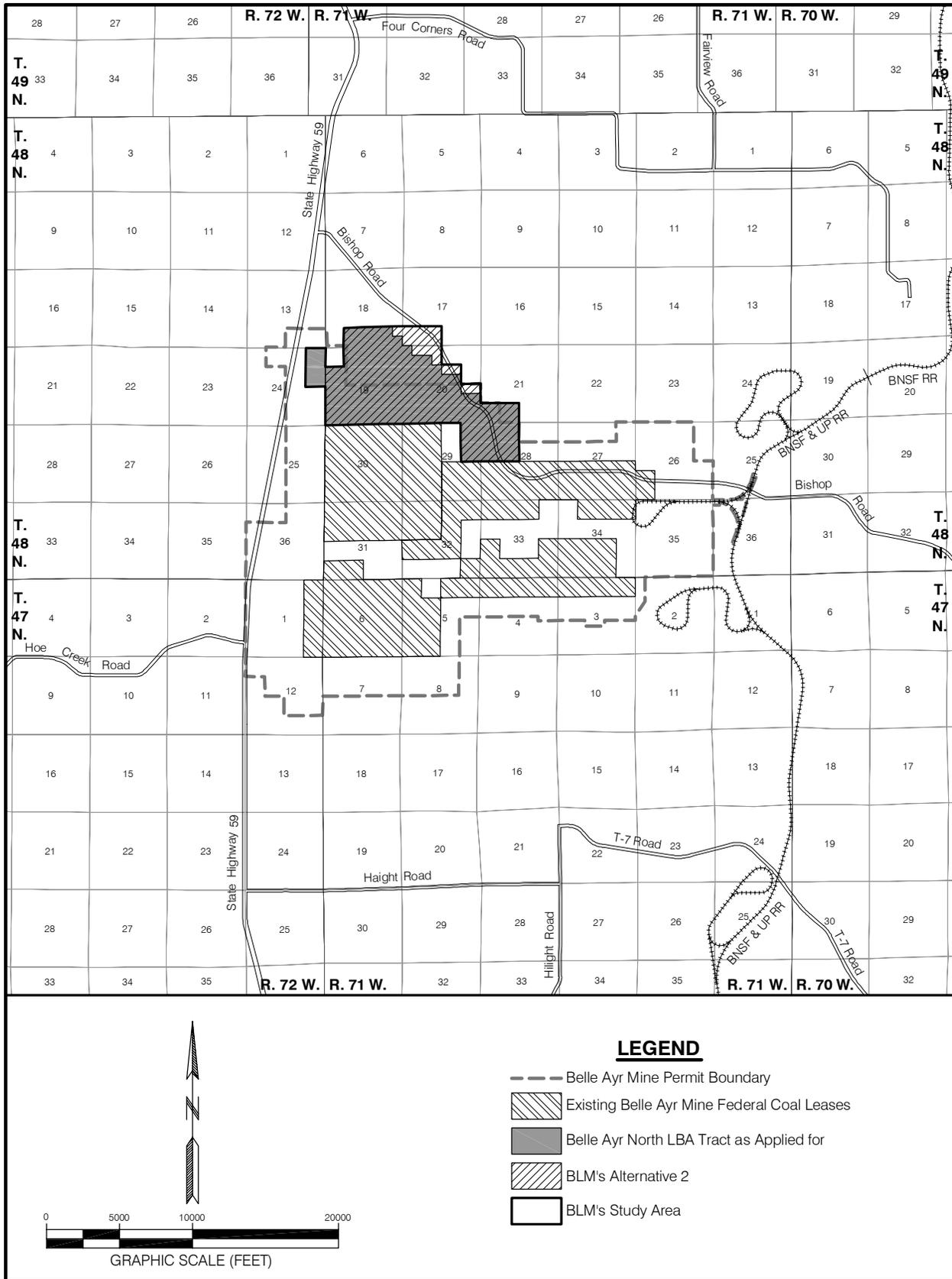


Figure ES-2. Belle Ayr North LBA Tract Alternatives.

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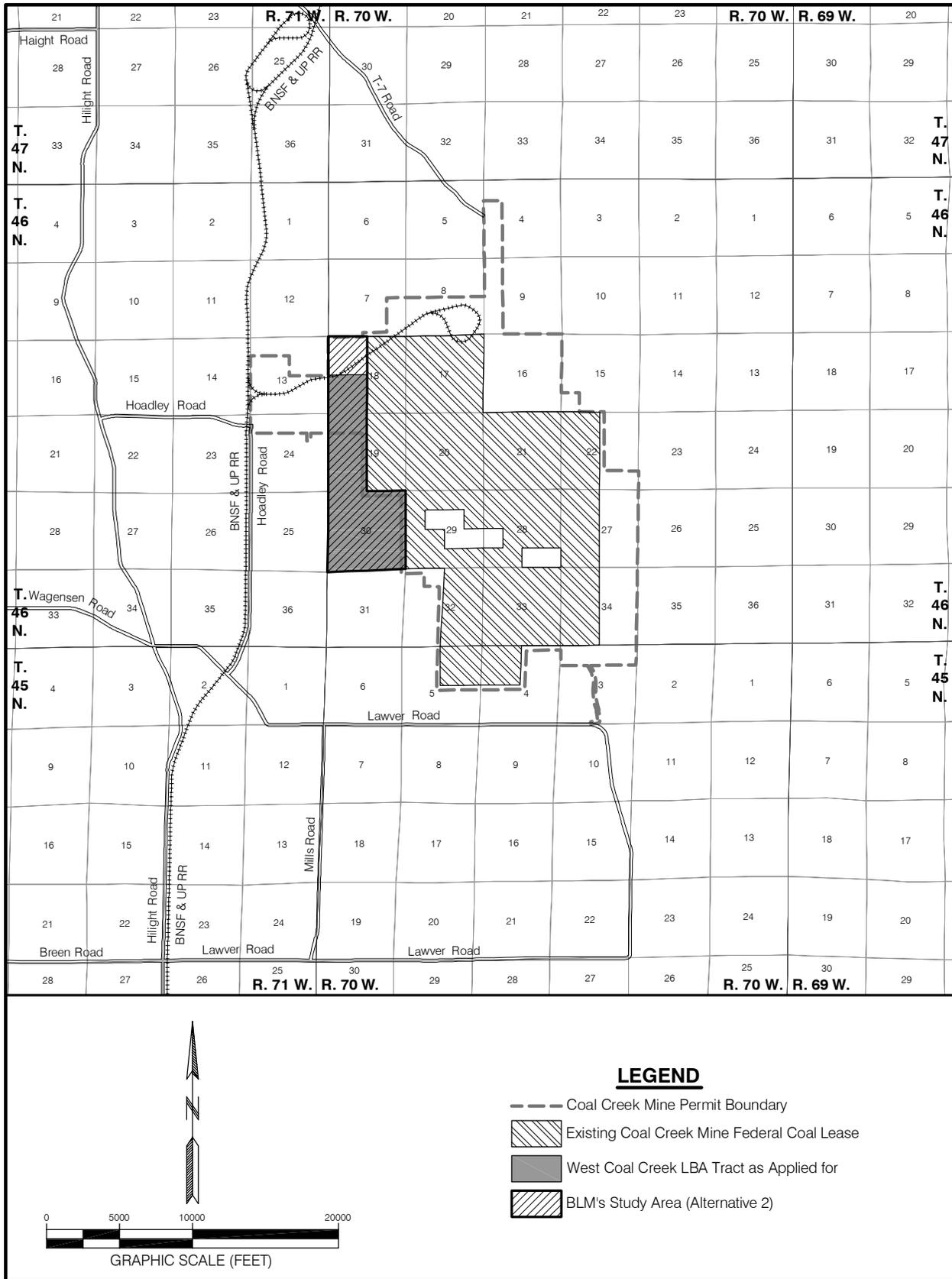


Figure ES-3. West Coal Creek LBA Tract Alternatives.

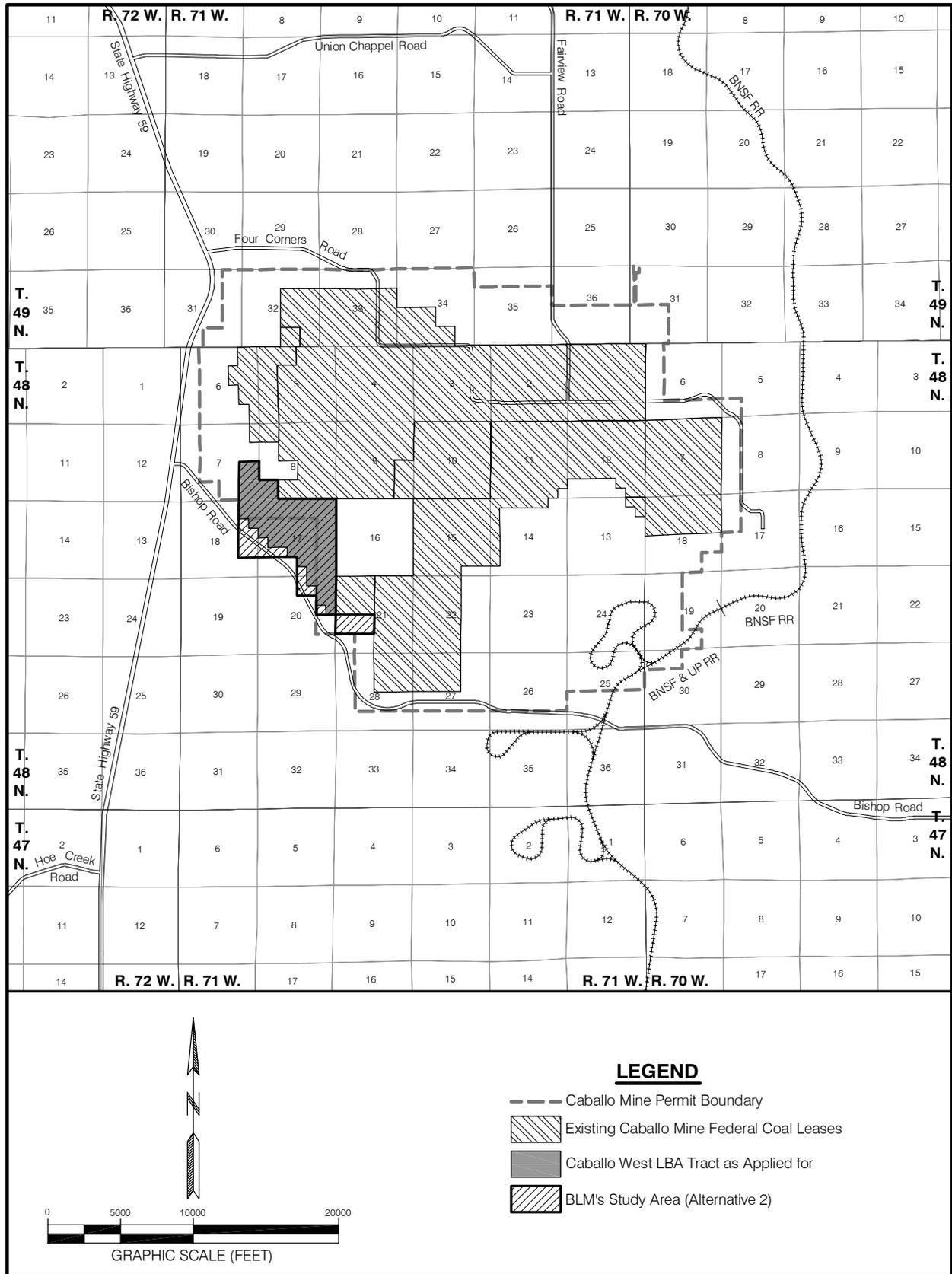
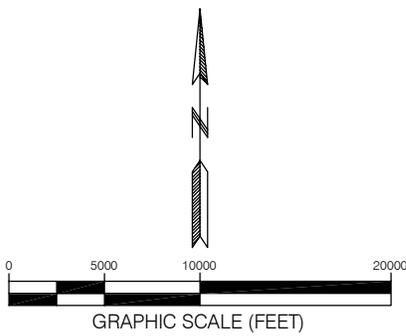
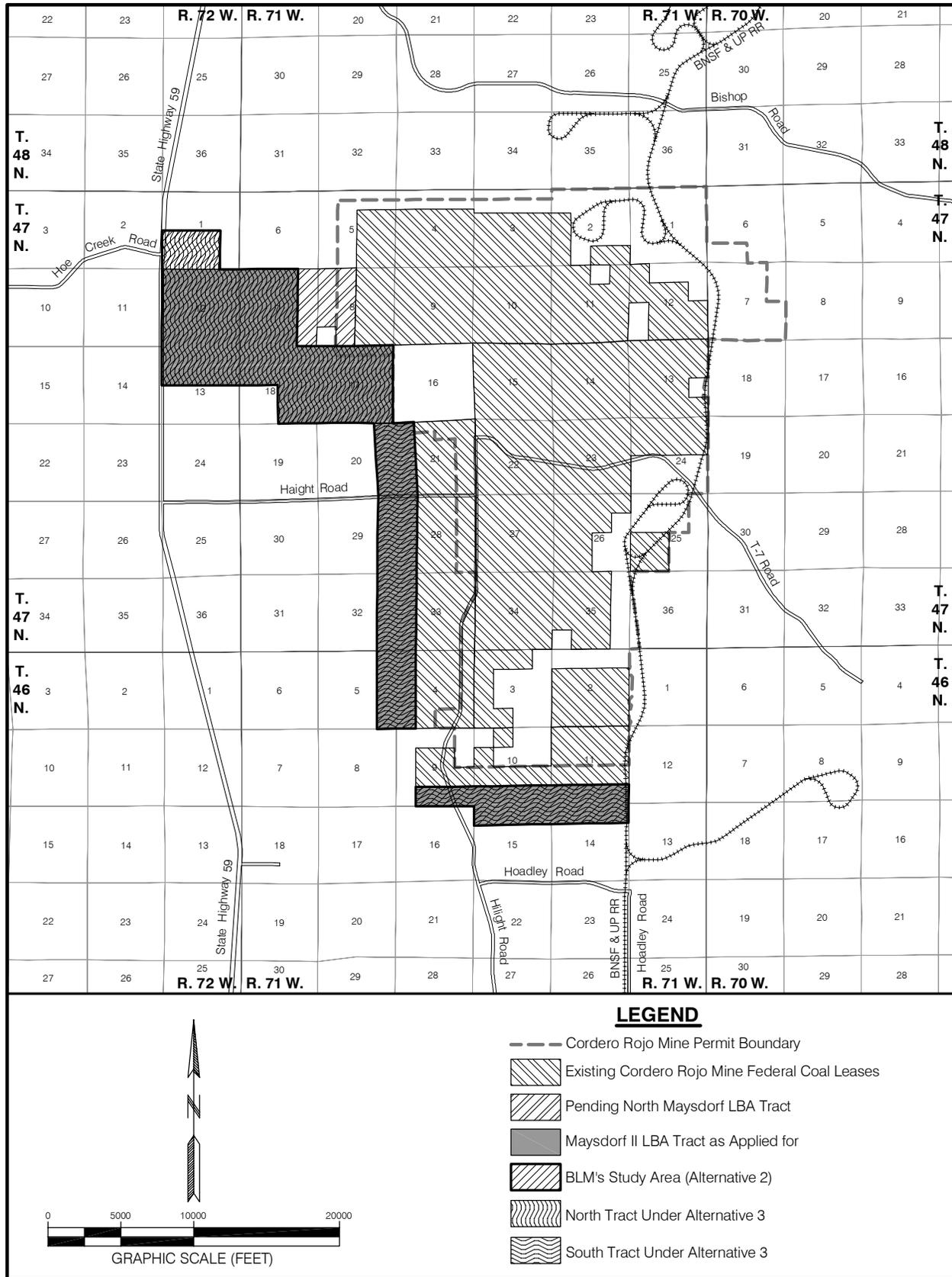


Figure ES-4. Caballo West LBA Tract Alternatives.



LEGEND

- Cordero Rojo Mine Permit Boundary
- [Diagonal Hatching] Existing Cordero Rojo Mine Federal Coal Leases
- [Diagonal Hatching] Pending North Maysdorf LBA Tract
- [Solid Grey] Maysdorf II LBA Tract as Applied for
- [Wavy Hatching] BLM's Study Area (Alternative 2)
- [Wavy Hatching] North Tract Under Alternative 3
- [Wavy Hatching] South Tract Under Alternative 3

Figure ES-5. Maysdorf II LBA Tract Alternatives.

directly held subsidiary of Rio Tinto Energy America (formerly Kennecott Energy and Coal Company).

These lease applications were reviewed by BLM, Wyoming State Office, Division of Mineral and Lands Authorization, who determined that the applications and the lands involved met the requirements of the regulations governing coal leasing on application at 43 CFR 3425.1. The Powder River Regional Coal Team (PRRCT) reviewed the Belle Ayr North LBA Tract at a public meeting held on April 24, 2005, in Gillette, Wyoming; the West Coal Creek and Caballo West LBA Tracts were reviewed at a public meeting held on April 19, 2006, in Casper, Wyoming; and the Maysdorf II LBA Tract was reviewed at a public meeting held on January 18, 2007, in Casper, Wyoming. The PRRCT recommended that BLM continue to process the Belle Ayr North, the West Coal Creek, the Caballo West, and the Maysdorf II coal lease applications at these respective meetings.

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

To evaluate the environmental impacts of leasing the coal, BLM must prepare an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) to evaluate the site-specific and cumulative environmental and socioeconomic impacts of leasing and developing the federal coal in an application area. Due to the proximity of the Belle Ayr North, West Coal Creek, Caballo West, and Maysdorf II LBA Tracts, BLM made a decision to prepare a single EIS to evaluate the environmental impacts of coal mining that would result from the issuance of these four leases. BLM does not authorize mining by issuing a lease for federal coal, but the impacts of mining the coal are considered in this EIS because it is a logical consequence of issuing a maintenance lease to an existing mine.

The Environmental Protection Agency (EPA) will publish a notice announcing the availability of the Draft Environmental Impact Statement (DEIS) in the *Federal Register*. BLM will publish a Notice of Availability and Notice of Public Hearing in the *Federal Register*. A 60-day comment period on the DEIS will commence with publication of the EPA's Notice of Availability. The BLM's *Federal Register* notice will be used to solicit public comments on the DEIS and on the fair market value, the maximum economic recovery, and the proposed competitive sale of coal from the LBA tract. A formal public hearing will be held during the 60-day comment period. All comments received on the DEIS will be included, with responses, in the Final Environmental Impact Statement (FEIS).

BLM will use the analysis in this EIS to decide whether or not to hold a coal lease sale for each of the federal coal tracts and issue federal coal leases. The LBA sale process is, by law and regulation, an open, public, competitive sealed-

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bid process. Bidding at a lease sale would be open to any qualified bidder. If a lease sale is held for the Belle Ayr North, West Coal Creek, Caballo West, and the Maysdorf II LBA Tracts, the applicants (FCW, ALC, CCC, and CMC, respectively) may not be the successful high bidders. If a lease sale is held, a federal coal lease would be issued to the highest bidder at the sale if a federal sale panel determined that the high bid at that sale meets or exceeds the fair market value of the coal as determined by BLM's economic evaluation, and if the U.S. Department of Justice determines that there are no antitrust violations if a lease is issued to the high bidder at the sale.

Cooperating agencies in the preparation of this EIS include Office of Surface Mining Reclamation and Enforcement (OSM), the Wyoming Department of Environmental Quality (WDEQ), and the Wyoming Department of Transportation (WYDOT). Other agencies, including OSM, will also use this analysis to make decisions related to leasing and mining the federal coal in this tract.

Not all of the coal included in the Belle Ayr North LBA Tract as applied for is considered to be mineable at this time. Bishop Road, a county road, overlies some of the coal included in the tract. The Surface Mining Control and Reclamation Act of 1977 (SMCRA) prohibits mining within 100 ft on either side of the right-of-way of any public road unless the appropriate public road authority allows the road to be relocated or closed after public notice, an opportunity for a public hearing, and a finding that the interests of the affected public and landowners will be protected [30 CFR 761.11(d)]. The coal underlying the portions of Bishop Road, its right-of-way, and the 100 ft buffer zone within the Belle Ayr North LBA Tract is included for consideration for leasing because that coal could be mined if the Campbell County Board of Commissioners, the authorized agency, determines that the road can be moved [43 CFR 3461.5(c)(2)(iii)]. If the road is not moved, including the coal underlying the road in the lease would allow maximum recovery of all the mineable coal adjacent to the 100 ft buffer zone on either side of the road right-of-way.

Not all of the coal included in the Maysdorf II LBA Tract as applied for is considered by CMC to be mineable at this time. Coal included in the tract is located within the BNSF & UP railroad right-of-way (ROW). CMC does not consider the coal underlying the ROW to be recoverable at this time because the cost that would be associated with moving the railroad would make it economically unfeasible to recover the underlying coal.

A portion of Wyoming State Highway 59 and portions of the Haight Road (County Road 44) and the Hilight Road (County Road 52) overlie portions of the coal included in the Maysdorf II LBA Tract. SMCRA prohibits mining within 100 ft on either side of the ROW of any public road unless the appropriate public road authority allows the road to be relocated or closed after public notice, an opportunity for a public hearing, and a finding that the interests of the affected public and landowners will be protected [30 CFR 761.11(d)]. The

coal underlying the portion of Highway 59, Hilight Road, and Haight Road, their rights-of-way, and the 100 ft buffer zones within the Maysdorf II LBA Tract are included for consideration for leasing because that coal could be mined if WYDOT and/or the Campbell County Board of Commissioners, the authorized agencies, determine that the roads can be moved [43 CFR 3461.5(c)(2)(iii)]. If the highway and Haight and Hilight roads are not moved, including the coal underlying the highway and Haight and Hilight roads in the lease would allow maximum recovery of all the mineable coal adjacent to the 100 ft buffer zones on either side of the highway and road ROWs. CMC is evaluating the feasibility of relocating the county roads.

The Maysdorf Point Cemetery was a small rural cemetery owned by the Campbell County Cemetery District that overlaid some of the coal included in the Maysdorf II LBA Tract. The cemetery was relocated during the summer of 2008 to the Mt. Pisgah Cemetery in Gillette, Wyoming. Mitigation is complete and Cordero Mining Co. is the surface owner. Since the Maysdorf Point Cemetery mitigation had not been completed prior to the preparation of this DEIS, the cemetery was described in full in the text. The mitigation of the cemetery will be addressed in the FEIS.

The Proposed Actions and alternatives to those actions are analyzed in detail in this DEIS.

- **Proposed Action** - The Proposed Action for each LBA tract is to hold a competitive coal lease sale and issue a maintenance lease to the successful bidder for the Belle Ayr North, the West Coal Creek, the Caballo West, and the Maysdorf II LBA Tracts as applied for (Figures ES-2, ES-3, ES-4, and ES-5, respectively). The Proposed Actions are described in Tables ES-1, ES-3, ES-4, and ES-6.
- **Alternative 1** - Under Alternative 1, the No Action alternative for each tract, the LBA tracts would not be leased, but the existing leases at the adjacent Belle Ayr, Coal Creek, Caballo, and Cordero Rojo Mines would be developed according to the existing approved mining plans. The No Action Alternatives are described in Tables ES-1, ES-3, ES-4, and ES-6. Rejection of the lease applications would not preclude an application to lease the tracts in the future.
- **Alternatives 2 and 3** - Under Alternative 2 for each tract and Alternative 3 for the Maysdorf II Tract, BLM would reconfigure the tract to include some or the entire LBA tract as applied for and may increase the size of the tract. BLM would hold a competitive lease sale and issue a maintenance lease for a tract that is larger than the applied-for tract. The Alternatives 2 and 3 are shown on Figures ES-2, ES-3, ES-4, and ES-5 and described in Tables ES-1, ES-3, ES-4, and ES-6.

The analysis in this EIS assumes that FCW would be the successful bidder on the Belle Ayr North LBA Tract, that ALC would be the successful bidder on the

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West Coal Creek LBA Tract, that CCC would be the successful bidder on the Caballo West LBA Tract, and that CMC would be the successful bidder on the Maysdorf II LBA Tract if the sales were held, and that they would be mined as maintenance tracts for the respective applicant mines.

Other alternatives that were considered but not analyzed in detail include holding competitive coal lease sales and issuing leases for one or more of the tracts to the successful bidder (not the applicants) for the purpose of developing new stand-alone mines, and delaying the sale of one or more of the tracts as applied for to increase the benefit to the public afforded by higher coal prices and/or to allow more complete recovery of the potential coal bed natural gas (CBNG) resources in the tracts prior to mining.

Tables ES-2, ES-5, and ES-7 summarize estimated coal production, surface disturbance, and mine life for the Belle Ayr, Caballo, and Cordero Rojo Mines if the public highway/county roads are not moved. The environmental impacts of mining the LBA tracts would be similar under the Proposed Actions and action alternatives. The following discussion assumes that the county roads are moved.

Critical elements of the human environment that could be affected by the proposed project include air quality, cultural resources, Native American religious concerns, threatened and endangered (T&E) plant and animal species, migratory birds, hazardous or solid waste, water quality, wetlands/riparian zones, floodplains, environmental justice, and invasive nonnative species (BLM 1988). Four other critical elements (areas of critical environmental concern, prime and unique farmland, wild and scenic rivers, and wilderness) are not present in the project areas and are not addressed further. In addition to the critical elements that are potentially present in the project areas, the EIS discusses the status and potential effects of the project on topography and physiography, geology, mineral resources, soils, water availability and quality, alluvial valley floors (AVFs), vegetation, wildlife, land use and recreation, paleontological resources, visual resources, noise, transportation resources, and socioeconomics.

The general South Gillette analysis area (the general area around all four LBA tracts) is located in the Powder River Basin (PRB), a part of the Northern Great Plains that includes most of northeastern Wyoming. The Belle Ayr North, West Coal Creek, Caballo West, and Maysdorf II LBA Tracts are located in the eastern part of the PRB, in an area consisting primarily of a dissected rolling upland plain with low relief, broken by low red-capped buttes, mesas, hills, and ridges. Playas are common in the basin, as are buttes and plateaus capped by clinker or sandstone. Elevations in the general South Gillette analysis area range from about 4,515 ft to 4,885 ft above sea level and slopes range from flat to around 57 percent. In the individual tracts, the average slopes range from 4 to 5 percent.

Table ES-1. Summary Comparison of Coal Production, Surface Disturbance, Mine Life, and Revenues for Belle Ayr North LBA Tract and Belle Ayr Mine if the Bishop Road (County Road 12) is Moved and the Underlying Coal is Recovered.

Item	No Action Alternative (Existing Belle Ayr Mine)	Added by Proposed Action	Added by Alternative 2
In-Place Coal (as of 6/30/08)	250.9 mmt	208.1 mmt	221.1 mmt
Mineable Coal (as of 6/30/08)	250.9 mmt	204.2 mmt	217.6 mmt
Recoverable Coal (as of 6/30/08) ¹	235.8 mmt	191.9 mmt	204.6 mmt
Coal Mined (as of 6/30/08)	544.5 mmt	—	—
Lease Area ²	4,945.5 ac	1,578.7 ac	1,669.3 ac
Total Area To Be Disturbed ²	11,621 ac	1,936.6 ac	1,947.0 ac
Permit Area ²	11,935 ac	1,727 ac	1,818 ac
Current Air Quality Permitted Production	45.0 mmt	0 mmt	0 mmt
Average Annual Post-2007 Coal Production	30.0 mmt	0 mmt	0 mmt
Remaining Life of Mine (post-2007)	8.3 yrs	6.4 yr	6.8 yr
Average Number of Employees	358	8	8
Total Projected State Revenues (post-2007) ³	\$382.9 million	\$342.2 – \$410.7 million	\$364.9 - \$437.8 million
Total Projected Federal Revenues (post-2007) ⁴	\$283.6 million	\$261.5 – \$329.9 million	\$278.7 - \$351.6 million

¹ Assumes 94 percent recovery of mineable coal.

² The lease area includes federal coal leases only and does not include state and private coal within the permit boundary. The disturbed area exceeds the leased area (total federal, state and private) because of the need for highwall reduction, topsoil removal, and other mine support activities outside the lease boundaries. The permit area is larger than the leased or disturbed area to assure that all disturbed lands are within the permit boundary and to allow an easily defined legal land description.

³ Revenues to the State of Wyoming include severance taxes, property and production (Ad Valorem) taxes, sales and use taxes, and Wyoming's share of federal royalty payments, AML fees, and bonus bids. State revenues are based on \$0.4312 per ton estimate for severance taxes × amount of recoverable coal, plus \$0.372 per ton estimate for Ad Valorem taxes × amount of recoverable coal, plus \$0.0569 per ton estimate for sales and use taxes × amount of recoverable coal, plus \$9.98 per ton (projected for 8,400-Btu coal) price × amount of recoverable coal × federal royalty of 12.5 percent minus federal's 50 percent share, plus \$0.28 per ton for AML fees × amount of recoverable coal minus federal's 50 percent share, plus bonus payment on LBA leased coal of \$0.30 to \$0.97 per ton (based on the range of bonus payments made for the last 6 LBAs sold in 2004 and 2005) × amount of mineable coal minus federal's 50 percent share. These figures could change based on the outcome of recent legislation that changed the percent of distribution to states.

⁴ Federal revenues include black lung taxes and the federal government's share of federal royalty payments, AML fees, and bonus bids. Federal revenues are based on \$9.98 per ton (projected for 8,400-Btu coal) price × amount of recoverable coal × black lung tax of 4.40 percent, plus \$9.98 per ton (for 8,400-Btu coal) price × amount of recoverable coal × federal royalty of 12.5 percent minus state's 50 percent share, plus \$0.28 per ton for AML fees × amount of recoverable coal minus state's 50 percent share, plus bonus payment on LBA leased coal of \$0.30 to \$0.97 per ton (based on the range of bonus payments made for the last 6 LBAs sold in 2004 and 2005) × amount of mineable coal minus state's 50 percent share. These figures could change based on the outcome of recent legislation that changed the percent of distribution to the federal government.

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Table ES-2. Summary Comparison of Coal Production, Surface Disturbance, Mine Life, and Revenues for Belle Ayr North LBA Tract and Belle Ayr Mine if the Bishop Road (County Road 12) is Not Moved and the Underlying Coal is Not Recovered.

Item	No Action Alternative (Existing Belle Ayr Mine)	Added by Proposed Action	Added by Alternative 2
In-Place Coal (as of 6/30/08)	250.9 mmt	208.1 mmt	221.1 mmt
Mineable Coal (as of 6/30/08)	250.9 mmt	164.7 mmt	159.6 mmt
Recoverable Coal (as of 6/30/08) ¹	235.8 mmt	154.8 mmt	150.1 mmt
Coal Mined (as of 6/30/08)	544.5 mmt	—	—
Lease Area ²	4,945.5 ac	1,578.7 ac	1,669.3 ac
Total Area To Be Disturbed ²	11,621 ac	1,274.9 ac	1,658.4 ac
Permit Area ²	11,935 ac	1,727 ac	1,818 ac
Current Air Quality Permitted Production	45.0 mmt	0 mmt	0 mmt
Average Annual Post-2007 Coal Production	30.0 mmt	0 mmt	0 mmt
Remaining Life of Mine (post-2007)	8.3 yrs	5.2 yr	5.0 yr
Average Number of Employees	358	8	8
Total Projected State Revenues (post-2007) ³	\$382.9 million	\$276.1 – \$331.3 million	\$267.7 - \$321.1 million
Total Projected Federal Revenues (post-2007) ⁴	\$283.6 million	\$210.9 – \$266.1 million	\$204.5 - \$258.0 million

¹ Assumes 94 percent recovery of mineable coal. This table excludes all coal that would not be mined beneath the Bishop County Road right-of-way.

² The lease area includes federal coal leases only and does not include state and private coal within the permit boundary. The disturbed area exceeds the leased area (total federal, state and private) because of the need for highwall reduction, topsoil removal, and other mine support activities outside the lease boundaries. The permit area is larger than the leased or disturbed area to assure that all disturbed lands are within the permit boundary and to allow an easily defined legal land description.

³ Revenues to the State of Wyoming include severance taxes, property and production (Ad Valorem) taxes, sales and use taxes, and Wyoming's share of federal royalty payments, AML fees, and bonus bids. State revenues are based on \$0.4312 per ton estimate for severance taxes × amount of recoverable coal, plus \$0.372 per ton estimate for Ad Valorem taxes × amount of recoverable coal, plus \$0.0569 per ton estimate for sales and use taxes × amount of recoverable coal, plus \$9.98 per ton (projected for 8,400-Btu coal) price × amount of recoverable coal × federal royalty of 12.5 percent minus federal's 50 percent share, plus \$0.28 per ton for AML fees × amount of recoverable coal minus federal's 50 percent share, plus bonus payment on LBA leased coal of \$0.30 to \$0.97 per ton (based on the range of bonus payments made for the last 6 LBAs sold in 2004 and 2005) × amount of mineable coal minus federal's 50 percent share. These figures could change based on the outcome of recent legislation that changed the percent of distribution to states.

⁴ Federal revenues include black lung taxes and the federal government's share of federal royalty payments, AML fees, and bonus bids. Federal revenues are based on \$9.98 per ton (projected for 8,400-Btu coal) price × amount of recoverable coal × black lung tax of 4.40 percent, plus \$9.98 per ton (for 8,400-Btu coal) price × amount of recoverable coal × federal royalty of 12.5 percent minus state's 50 percent share, plus \$0.28 per ton for AML fees × amount of recoverable coal minus state's 50 percent share, plus bonus payment on LBA leased coal of \$0.30 to \$0.97 per ton (based on the range of bonus payments made for the last 6 LBAs sold in 2004 and 2005) × amount of mineable coal minus state's 50 percent share. These figures could change based on the outcome of recent legislation that changed the percent of distribution to the federal government.

Table ES-3. Summary Comparison of Coal Production, Surface Disturbance, Mine Life, and Revenues for West Coal Creek LBA Tract and Coal Creek Mine.

Item	No Action Alternative (Existing Coal Creek Mine)	Added by Proposed Action	Added by Alternative 2
In-Place Coal (as of 6/30/08)	241.7 mmt	63.3 mmt	69.3 mmt
Mineable Coal (as of 6/30/08)	241.7 mmt	63.3 mmt	63.3 mmt
Recoverable Coal (as of 6/30/08) ¹	217.5 mmt	57.0 mmt	57.0 mmt
Coal Mined (as of 6/30/08)	68.9 mmt	—	—
Lease Area ²	5,918.0 ac	1,151.3 ac	1,313.3 ac
Total Area To Be Disturbed ²	8,354.9 ac	1,925.4 ac	2,210.1 ac
Permit Area ²	9,722.7 ac	3,162 ac	3,162 ac
Current Air Quality Permitted Production	25.0 mmt	0 mmt	0 mmt
Average Annual Post-2007 Coal Production	13.4 mmt	0 mmt	0 mmt
Remaining Life of Mine (post-2007)	16.2 yrs	4.3 yr	4.3 yr
Average Number of Employees	125	0	0
Total Projected State Revenues (post-2007) ³	\$353.2 million	\$102.1 – \$123.3 million	\$102.1 - \$123.3 million
Total Projected Federal Revenues (post-2007) ⁴	\$261.6 million	\$78.1 - \$99.3 million	\$78.1 - \$99.3 million

¹ Assumes 90 percent recovery of mineable coal.

² The lease area includes federal coal leases only and does not include state and private coal within the permit boundary. The disturbed area exceeds the leased area (total federal, state and private) because of the need for highwall reduction, topsoil removal, and other mine support activities outside the lease boundaries. The permit area is larger than the leased or disturbed area to assure that all disturbed lands are within the permit boundary and to allow an easily defined legal land description.

³ Revenues to the State of Wyoming include severance taxes, property and production (Ad Valorum) taxes, sales and use taxes, and Wyoming's share of federal royalty payments, AML fees, and bonus bids. State revenues are based on \$0.4312 per ton estimate for severance taxes × amount of recoverable coal, plus \$0.372 per ton estimate for Ad Valorum taxes × amount of recoverable coal, plus \$0.0569 per ton estimate for sales and use taxes × amount of recoverable coal, plus \$9.98 per ton (projected for 8,400-Btu coal) price × amount of recoverable coal × federal royalty of 12.5 percent minus federal's 50 percent share, plus \$0.28 per ton for AML fees × amount of recoverable coal minus federal's 50 percent share, plus bonus payment on LBA leased coal of \$0.30 to \$0.97 per ton (based on the range of bonus payments made for the last 6 LBAs sold in 2004 and 2005) × amount of mineable coal minus federal's 50 percent share. These figures could change based on the outcome of recent legislation that changed the percent of distribution of mineral royalties to states.

⁴ Federal revenues include black lung taxes and the federal government's share of federal royalty payments, AML fees, and bonus bids. Federal revenues are based on \$9.98 per ton (projected for 8,400-Btu coal) price × amount of recoverable coal × black lung tax of 4.40 percent, plus \$9.98 per ton (for 8,400-Btu coal) price × amount of recoverable coal × federal royalty of 12.5 percent minus state's 50 percent share, plus \$0.28 per ton for AML fees × amount of recoverable coal minus state's 50 percent share, plus bonus payment on LBA leased coal of \$0.30 to \$0.97 per ton (based on the range of bonus payments made for the last 6 LBAs sold in 2004 and 2005) × amount of mineable coal minus state's 50 percent share. These figures could change based on the outcome of recent legislation that changed the percent of distribution of mineral royalties to the federal government.

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Table ES-4. Summary Comparison of Coal Production, Surface Disturbance, Mine Life, and Revenues for Caballo West LBA Tract and Caballo Mine if the Bishop Road (County Road 12) is Moved and the Underlying Coal is Recovered.

Item	No Action Alternative (Existing Caballo Mine)	Added by Proposed Action	Added by Alternative 2
In-Place Coal (as of 6/30/08)	893.7 mmt	98.2 mmt	131.4 mmt
Mineable Coal (as of 6/30/08)	687.8 mmt	87.5 mmt	105.5 mmt
Recoverable Coal (as of 6/30/08) ¹	584.8 mmt	81.8 mmt	98.6 mmt
Coal Mined (as of 6/30/08)	510.4 mmt	—	—
Lease Area ²	11,704.5 ac	777.5 ac	1,024.0 ac
Total Area To Be Disturbed ²	16,898.0 ac	1,349.9 ac	1,390.4 ac
Permit Area ²	19,974.7 ac	1,294.1 ac	1,518.4 ac
Current Air Quality Permitted Production	50.0 mmt	0 mmt	0 mmt
Average Annual Post-2007 Coal Production	37.8 mmt	0 mmt	0 mmt
Remaining Life of Mine (post-2007)	15.4 yrs	2.2 yr	2.6 yr
Average Number of Employees	549	0	0
Total Projected State Revenues (post-2007) ³	\$949.6 million	\$146.0 – \$175.3 million	\$175.9 - \$211.3 million
Total Projected Federal Revenues (post-2007) ⁴	\$703.4 million	\$111.5 - \$140.8 million	\$134.4 - \$169.8 million

¹ Assumes 93.5 percent recovery of mineable coal.

² The lease area includes federal coal leases only and does not include state and private coal within the permit boundary. The disturbed area exceeds the leased area (total federal, state and private) because of the need for highwall reduction, topsoil removal, and other mine support activities outside the lease boundaries. The permit area is larger than the leased or disturbed area to assure that all disturbed lands are within the permit boundary and to allow an easily defined legal land description.

³ Revenues to the State of Wyoming include severance taxes, property and production (Ad Valorum) taxes, sales and use taxes, and Wyoming's share of federal royalty payments, AML fees, and bonus bids. State revenues are based on \$0.4312 per ton estimate for severance taxes × amount of recoverable coal, plus \$0.372 per ton estimate for Ad Valorum taxes × amount of recoverable coal, plus \$0.0569 per ton estimate for sales and use taxes × amount of recoverable coal, plus \$9.98 per ton (projected for 8,400-Btu coal) price × amount of recoverable coal × federal royalty of 12.5 percent minus federal's 50 percent share, plus \$0.28 per ton for AML fees × amount of recoverable coal minus federal's 50 percent share, plus bonus payment on LBA leased coal of \$0.30 to \$0.97 per ton (based on the range of bonus payments made for the last 6 LBAs sold in 2004 and 2005) × amount of mineable coal minus federal's 50 percent share. These figures could change based on the outcome of recent legislation that changed the percent of distribution of mineral royalties to states.

⁴ Federal revenues include black lung taxes and the federal government's share of federal royalty payments, AML fees, and bonus bids. Federal revenues are based on \$9.98 per ton (projected for 8,400-Btu coal) price × amount of recoverable coal × black lung tax of 4.40 percent, plus \$9.98 per ton (for 8,400-Btu coal) price × amount of recoverable coal × federal royalty of 12.5 percent minus state's 50 percent share, plus \$0.28 per ton for AML fees × amount of recoverable coal minus state's 50 percent share, plus bonus payment on LBA leased coal of \$0.30 to \$0.97 per ton (based on the range of bonus payments made for the last 6 LBAs sold in 2004 and 2005) × amount of mineable coal minus state's 50 percent share. These figures could change based on the outcome of recent legislation that changed the percent of distribution of mineral royalties to the federal government.

Table ES-5. Summary Comparison of Coal Production, Surface Disturbance, Mine Life, and Revenues for Caballo West LBA Tract and Caballo Mine if the Bishop Road (County Road 12) is Not Moved and the Underlying Coal is Not Recovered.

Item	No Action Alternative (Existing Caballo Mine)	Added by Proposed Action	Added by Alternative 2
In-Place Coal (as of 6/30/08)	893.7 mmt	98.2 mmt	131.4 mmt
Mineable Coal (as of 6/30/08)	687.8 mmt	87.5 mmt	98.1 mmt
Recoverable Coal (as of 6/30/08) ¹	584.8 mmt	81.8 mmt	91.7 mmt
Coal Mined (as of 6/30/08)	510.4 mmt	—	—
Lease Area ²	11,704.5 ac	777.5 ac	1,024.0 ac
Total Area To Be Disturbed ²	16,898.0 ac	1,213.0 ac	1,253.6 ac
Permit Area ²	19,974.7 ac	1,294.1 ac	1,518.4 ac
Current Air Quality Permitted Production	50.0 mmt	0 mmt	0 mmt
Average Annual Post-2007 Coal Production	37.8 mmt	0 mmt	0 mmt
Remaining Life of Mine (post-2007)	15.4 yrs	2.2 yr	2.4 yr
Average Number of Employees	549	0	0
Total Projected State Revenues (post-2007) ³	\$949.6 million	\$146.0 - \$175.3 million	\$163.6 - \$196.5 million
Total Projected Federal Revenues (post-2007) ⁴	\$703.4 million	\$111.5 - \$140.8 million	\$125.0 - \$157.9 million

¹ Assumes 93.5 percent recovery of mineable coal. This table excludes all coal that would not be mined beneath the Bishop County Road right-of-way.

² The lease area includes federal coal leases only and does not include state and private coal within the permit boundary. The disturbed area exceeds the leased area (total federal, state and private) because of the need for highwall reduction, topsoil removal, and other mine support activities outside the lease boundaries. The permit area is larger than the leased or disturbed area to assure that all disturbed lands are within the permit boundary and to allow an easily defined legal land description.

³ Revenues to the State of Wyoming include severance taxes, property and production (Ad Valorum) taxes, sales and use taxes, and Wyoming's share of federal royalty payments, AML fees, and bonus bids. State revenues are based on \$0.4312 per ton estimate for severance taxes × amount of recoverable coal, plus \$0.372 per ton estimate for Ad Valorum taxes × amount of recoverable coal, plus \$0.0569 per ton estimate for sales and use taxes × amount of recoverable coal, plus \$9.98 per ton (projected for 8,400-Btu coal) price × amount of recoverable coal × federal royalty of 12.5 percent minus federal's 50 percent share, plus \$0.28 per ton for AML fees × amount of recoverable coal minus federal's 50 percent share, plus bonus payment on LBA leased coal of \$0.30 to \$0.97 per ton (based on the range of bonus payments made for the last 6 LBAs sold in 2004 and 2005) × amount of mineable coal minus federal's 50 percent share. These figures could change based on the outcome of recent legislation that changed the percent of distribution of mineral royalties to states.

⁴ Federal revenues include black lung taxes and the federal government's share of federal royalty payments, AML fees, and bonus bids. Federal revenues are based on \$9.98 per ton (projected for 8,400-Btu coal) price × amount of recoverable coal × black lung tax of 4.40 percent, plus \$9.98 per ton (for 8,400-Btu coal) price × amount of recoverable coal × federal royalty of 12.5 percent minus state's 50 percent share, plus \$0.28 per ton for AML fees × amount of recoverable coal minus state's 50 percent share, plus bonus payment on LBA leased coal of \$0.30 to \$0.97 per ton (based on the range of bonus payments made for the last 6 LBAs sold in 2004 and 2005) × amount of mineable coal minus state's 50 percent share. These figures could change based on the outcome of recent legislation that changed the percent of distribution of mineral royalties to the federal government.

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Table ES-6. Summary Comparison of Coal Production, Surface Disturbance, Mine Life, and Revenues for Maysdorf II LBA Tract, Assuming Wyoming Highway 59 and the BNSF & UP Railroad are Not Moved and the Underlying Coal is Not Recovered and if the Haight and Hilight Roads and the Maysdorf Point Cemetery are Moved and the Underlying Coal is Recovered.

Item	No Action Alternative (Existing Cordero Rojo Mine)	Added by Proposed Action	Added by Alternative 2	Added by Alternative 3 (North Tract)	Added by Alternative 3 (South Tract)
In-Place Coal (as of 6/30/08)	572.9 mmt	504.0 mmt	533.0 mmt	326.4 mmt	206.6 mmt
Mineable Coal (as of 6/30/08)	571.5 mmt	499.5 mmt	527.3 mmt	322.5 mmt	204.8 mmt
Recoverable Coal (as of 6/30/08) ¹	525.9 mmt	449.6 mmt	474.5 mmt	290.2 mmt	184.3 mmt
Coal Mined (as of 6/30/08)	769.3 mmt	—	—	—	—
Lease Area ²	13,529.31 ac	4,653.8 ac	4,895.6 ac	2,825.4 ac	2,070.3 ac
Total Area To Be Disturbed ²	14,694.0 ac	6,675.0 ac	6,917.3 ac	3,429.6 ac	3,487.7 ac
Permit Area ²	16,910.6 ac	16,832.4 ac	16,832.4 ac	6,850.3 ac	10,683.4 ac
Current Air Quality Permitted Production	65.0 mmt	0 mmt	0 mmt	0 mmt	0 mmt
Average Annual Post-2007 Coal Production	46.3 mmt	0 mmt	0 mmt	0 mmt	0 mmt
Remaining Life of Mine (post-2007)	11.4 yrs	9.7 yr	10.3 yr	6.3 yr	3.9 yr
Average Number of Employees	510	60	63	8	2
Total Projected State Revenues (post-2007) ³	\$854.0 million	\$805.0 - \$972.3 million	\$849.7 - \$1026.5 million	\$519.6 - \$627.7 million	\$330.0 - \$398.6 million
Total Projected Federal Revenues (post-2007) ⁴	\$632.6 million	\$615.7 - \$783.1 million	\$649.9 - \$826.7 million	\$397.4 - \$505.5 million	\$252.4 - \$321.0 million

¹ Assumes 90 percent recovery of mineable coal. This table excludes all coal that would not be mined beneath the Wyoming Highway 59 right-of-way and the BNSF & UP railroad right-of-way.

² The lease area includes federal coal leases only and does not include state and private coal within the permit boundary. The disturbed area exceeds the leased area (total federal, state and private) because of the need for highwall reduction, topsoil removal, and other mine support activities outside the lease boundaries. The permit area is larger than the leased or disturbed area to assure that all disturbed lands are within the permit boundary and to allow an easily defined legal land description.

³ Revenues to the State of Wyoming include severance taxes, property and production (Ad Valorem) taxes, sales and use taxes, and Wyoming's share of federal royalty payments, AML fees, and bonus bids. State revenues are based on \$0.4312 per ton estimate for severance taxes × amount of recoverable coal, plus \$0.372 per ton estimate for Ad Valorem taxes × amount of recoverable coal, plus \$0.0569 per ton estimate for sales and use taxes × amount of recoverable coal, plus \$9.98 per ton (projected for 8,400-Btu coal) price × amount of recoverable coal × federal royalty of 12.5 percent minus federal's 50 percent share, plus \$0.28 per ton for AML fees × amount of recoverable coal minus federal's 50 percent share, plus bonus payment on LBA leased coal of \$0.30 to \$0.97 per ton (based on the range of bonus payments made for the last 6 LBAs sold in 2004 and 2005) × amount of mineable coal minus federal's 50 percent share. These figures could change based on the outcome of recent legislation that changed the percent of distribution of mineral royalties to states.

⁴ Federal revenues include black lung taxes and the federal government's share of federal royalty payments, AML fees, and bonus bids. Federal revenues are based on \$9.98 per ton (projected for 8,400-Btu coal) price × amount of recoverable coal × black lung tax of 4.40 percent, plus \$9.98 per ton (for 8,400-Btu coal) price × amount of recoverable coal × federal royalty of 12.5 percent minus state's 50 percent share, plus \$0.28 per ton for AML fees × amount of recoverable coal minus state's 50 percent share, plus bonus payment on LBA leased coal of \$0.30 to \$0.97 per ton (based on the range of bonus payments made for the last 6 LBAs sold in 2004 and 2005) × amount of mineable coal minus state's 50 percent share. These figures could change based on the outcome of recent legislation that changed the percent of distribution of mineral royalties to the federal government.

Table ES-7. Summary Comparison of Coal Production, Surface Disturbance, Mine Life, and Revenues for Maysdorf II LBA Tract, Assuming Wyoming Highway 59, the Haight and Hilight Roads, the Maysdorf Point Cemetery, and the BNSF & UP Railroad are Not Moved and the Underlying Coal is Not Recovered.

Item	No Action Alternative (Existing Cordero Rojo Mine)	Added by Proposed Action	Added by Alternative 2	Added by Alternative 3 (North Tract)	Added by Alternative 3 (South Tract)
In-Place Coal (as of 6/30/08)	572.9 mmt	504.0 mmt	533.0 mmt	326.4 mmt	206.6 mmt
Mineable Coal (as of 6/30/08)	571.5 mmt	482.5 mmt	510.3 mmt	322.5 mmt	187.8 mmt
Recoverable Coal (as of 6/30/08) ¹	525.9 mmt	434.3 mmt	459.3 mmt	290.2 mmt	169.1 mmt
Coal Mined (as of 6/30/08)	769.3 mmt	—	—	—	—
Lease Area ²	13,529.31 ac	4,653.8 ac	4,895.6 ac	2,825.4 ac	2,070.3 ac
Total Area To Be Disturbed ²	14,694.0 ac	6,200.8 ac	6,422.5 ac	3,353.9 ac	3,068.6 ac
Permit Area ²	16,910.6 ac	16,832.4 ac	16,832.4 ac	6,850.3 ac	10,683.4 ac
Current Air Quality Permitted Production	65.0 mmt	0 mmt	0 mmt	0 mmt	0 mmt
Average Annual Post-2007 Coal Production	46.3 mmt	0 mmt	0 mmt	0 mmt	0 mmt
Remaining Life of Mine (post-2007)	11.4 yrs	9.4 yr	9.9 yr	6.3 yr	3.7 yr
Average Number of Employees	510	60	63	8	2
Total Projected State Revenues (post-2007) ³	\$854.0 million	\$777.6 - \$939.3 million	\$822.4 - \$993.3 million	\$519.6 - \$627.7 million	\$302.8 - \$365.7 million
Total Projected Federal Revenues (post-2007) ⁴	\$632.6 million	\$594.8 - \$756.4 million	\$629.0 - \$800.0 million	\$397.4 - \$505.5 million	\$231.6 - \$294.5 million

¹ Assumes 90 percent recovery of mineable coal. This table excludes all coal that would not be mined beneath the Wyoming Highway 59 right-of-way, BNSF & UP railroad right-of-way, Maysdorf Point Cemetery buffer zone, and the Haight and Hilight Roads rights-of-way.

² The lease area includes federal coal leases only and does not include state and private coal within the permit boundary. The disturbed area exceeds the leased area (total federal, state and private) because of the need for highwall reduction, topsoil removal, and other mine support activities outside the lease boundaries. The permit area is larger than the leased or disturbed area to assure that all disturbed lands are within the permit boundary and to allow an easily defined legal land description.

³ Revenues to the State of Wyoming include severance taxes, property and production (Ad Valorem) taxes, sales and use taxes, and Wyoming's share of federal royalty payments, AML fees, and bonus bids. State revenues are based on \$0.4312 per ton estimate for severance taxes × amount of recoverable coal, plus \$0.372 per ton estimate for Ad Valorem taxes × amount of recoverable coal, plus \$0.0569 per ton estimate for sales and use taxes × amount of recoverable coal, plus \$9.98 per ton (projected for 8,400-Btu coal) price × amount of recoverable coal × federal royalty of 12.5 percent minus federal's 50 percent share, plus \$0.28 per ton for AML fees × amount of recoverable coal minus federal's 50 percent share, plus bonus payment on LBA leased coal of \$0.30 to \$0.97 per ton (based on the range of bonus payments made for the last 6 LBAs sold in 2004 and 2005) × amount of mineable coal minus federal's 50 percent share. These figures could change based on the outcome of recent legislation that changed the percent of distribution of mineral royalties to states.

⁴ Federal revenues include black lung taxes and the federal government's share of federal royalty payments, AML fees, and bonus bids. Federal revenues are based on \$9.98 per ton (projected for 8,400-Btu coal) price × amount of recoverable coal × black lung tax of 4.40 percent, plus \$9.98 per ton (for 8,400-Btu coal) price × amount of recoverable coal × federal royalty of 12.5 percent minus state's 50 percent share, plus \$0.28 per ton for AML fees × amount of recoverable coal minus state's 50 percent share, plus bonus payment on LBA leased coal of \$0.30 to \$0.97 per ton (based on the range of bonus payments made for the last 6 LBAs sold in 2004 and 2005) × amount of mineable coal minus state's 50 percent share. These figures could change based on the outcome of recent legislation that changed the percent of distribution of mineral royalties to the federal government.

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The mineable coal seams in the PRB are part of the Tongue River Member of the Fort Union, which are referred to as the Anderson and Canyon, Wyodak-Anderson, and Wyodak coal beds by mines in the eastern PRB. There is one mineable coal zone within the general South Gillette analysis area. Locally, this coal zone is referred to as either the Wyodak or the Wyodak-Anderson. The average thickness of the Wyodak coal seam ranges between 36 ft within the West Coal Creek LBA Tract to 74 ft within the Caballo West LBA. Up to five noncoal splits or partings occur within the seam, but they are typically local, discontinuous lenses of carbonaceous clay or shale that are less than 1 ft thick.

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

The geology from the base of the coal to the land surface would be subject to considerable permanent change on each LBA tract under the Proposed Actions or action alternatives. The coal would be permanently removed and the replaced overburden would be a relatively homogeneous mixture compared to the premining layered overburden.

Development of other minerals potentially present on the tracts could not occur during mining, but could occur after mining. There are currently 18 wells capable of producing oil or conventional gas located on the four LBA tract study areas. Of the 18 wells, 13 are considered to have recoverable reserves, using in-place oil and gas recovery methods. Estimated remaining recoverable reserves from these 13 wells are just over 273,700 barrels of oil and 12 million cubic feet (mmcf) of gas (A&C 2008). Any oil and conventional wells on the tracts would have to be plugged and abandoned during mining but could be recompleted after mining if the remaining reserves justify the expense of the recompletion.

Wyoming Oil and Gas Conservation Commission (WOGCC) records show that as of December 13, 2007, 445 wells had been drilled for CBNG production in 57-section area encompassing or immediately adjacent to the general South Gillette analysis area and 288 were capable of producing (WOGCC 2007). There are 153 CBNG wells within the four LBA tracts. CBNG is also being produced locally from other deeper seams in the PRB. Fifteen wells have been completed in the deeper Pawnee coal seam on and west of the Maysdorf II LBA tract. All of these Pawnee wells are either shut in or are producing water (WOGCC 2007). CBNG resources that are not recovered prior to mining would

be vented to the atmosphere and irretrievably lost when the coal is removed. BLM's policy is to optimize recovery of both resources, ensure the public receives a reasonable return, and encourage agreements between lessees or use BLM authority to minimize loss of publicly owned resources.

Significant or unique paleontological resources have not been reported by the SGAC mines, although additional surveys for paleontological resources may be required.

Moderately adverse short-term impacts to air quality would be extended onto the Belle Ayr North LBA Tract. Long-term modeling predicted no exceedances of the annual PM₁₀ National Ambient Air Quality Standards (NAAQS) at the permitted 45-mmtpy production rate and there have been no exceedances of the 24-hour and annual PM₁₀ NAAQS at the Belle Ayr Mine. EPA has revoked the annual PM₁₀ standard of 50 µg/m³ but until the Wyoming enters into rulemaking to revise the WAAQS, that standard is still effective. The dispersion model showed a maximum concentration on the boundary of the Belle Ayr lands necessary to conduct mining (LNCM) of 42.02 micrograms per cubic meter (µg/m³) in 2013 (Figure ES-6). There would be an increase in stripping ratio, which could increase fugitive dust emissions, but emissions would be expected to remain within daily and annual NAAQS limits.

Moderately adverse short-term impacts to air quality would be extended onto the West Coal Creek LBA Tract. Long-term modeling predicted no exceedances of the annual PM₁₀ NAAQS at the permitted 25-mmtpy production rate and there have been no exceedances of the 24-hour and annual PM₁₀ NAAQS at the Coal Creek Mine. EPA has revoked the annual PM₁₀ standard of 50 µg/m³ but until the Wyoming enters into rulemaking to revise the WAAQS, that standard is still effective. The dispersion model showed a maximum concentration on the Coal Creek LNCM boundary of 23.11 µg/m³ in 2016 (Figure ES-7). There would be an increase in stripping ratio, which could increase fugitive dust emissions, but emissions would be expected to remain within daily and annual NAAQS limits.

Moderately adverse short-term impacts to air quality would be extended onto the Caballo West LBA Tract. Long-term modeling predicted no exceedances of the annual PM₁₀ NAAQS at the permitted 50-mmtpy production rate and there have been no exceedances of the 24-hour and annual PM₁₀ NAAQS. EPA has revoked the annual PM₁₀ standard of 50 µg/m³ but until the Wyoming enters into rulemaking to revise the WAAQS, that standard is still effective. The dispersion model showed a maximum concentration on the Caballo LNCM boundary of 46.98 µg/m³ in 2014 (Figure ES-8). There would be an increase in stripping ratio, which could increase fugitive dust emissions, but emissions would be expected to remain within daily and annual NAAQS limits.

Moderately adverse short-term impacts to air quality would be extended onto the Maysdorf II LBA Tract. Long-term modeling predicted no exceedances of

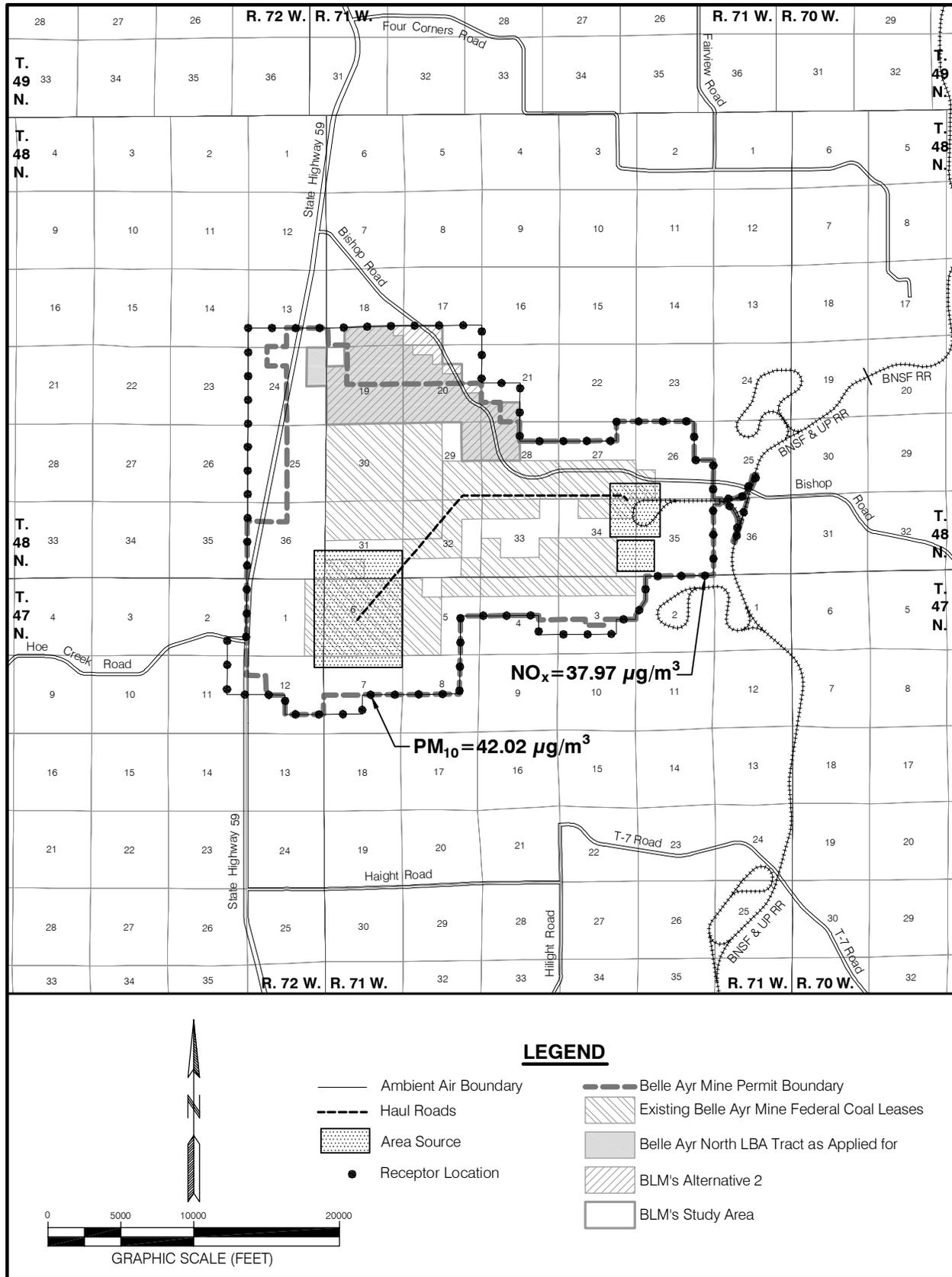


Figure ES-6. Maximum Modeled PM_{10} and NO_x Concentrations at the Belle Ayr Mine Ambient Air Boundary for the Year 2013.

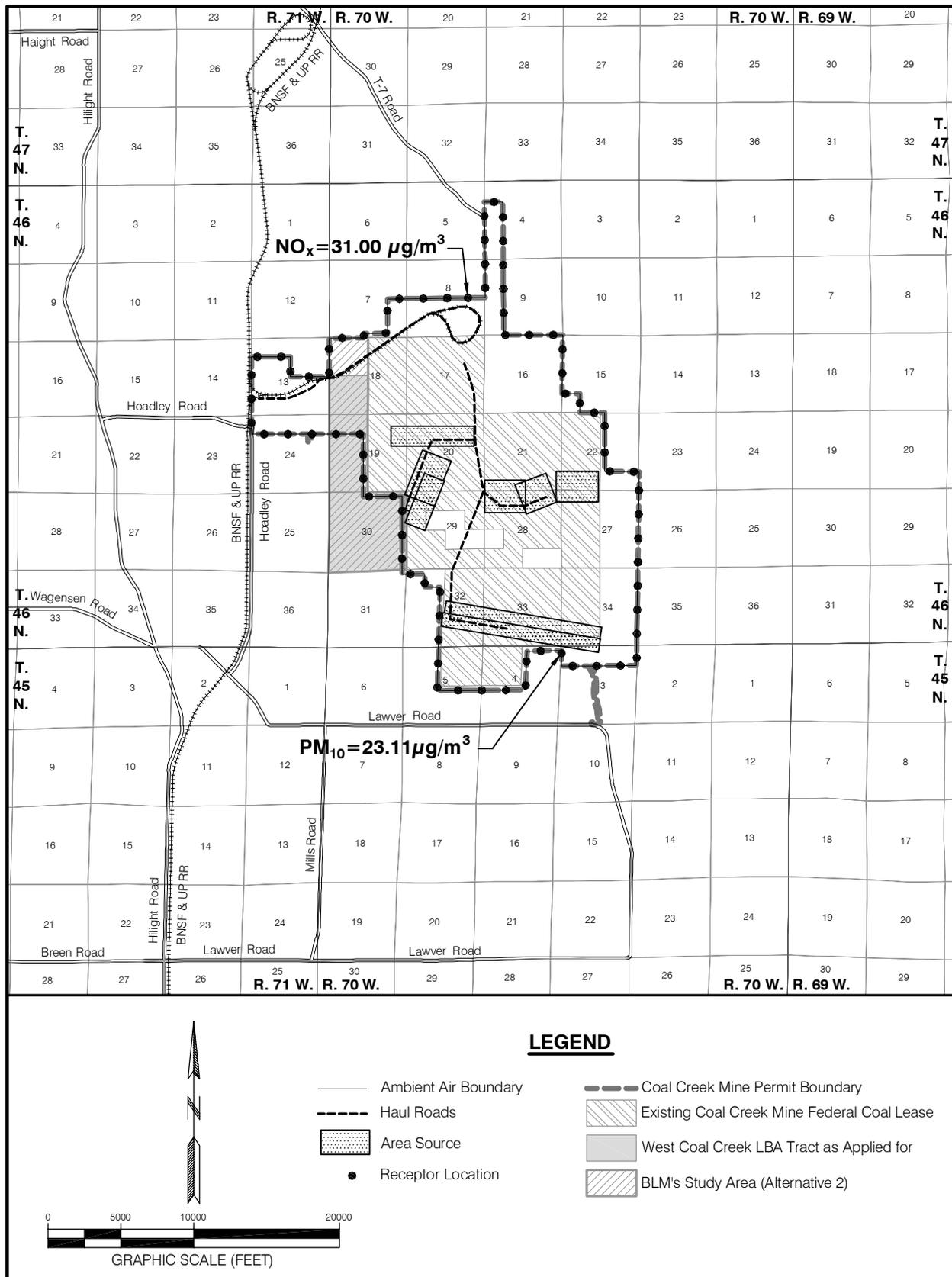


Figure ES-7. Maximum Modeled PM_{10} and NO_x Concentrations at the Coal Creek Mine Ambient Air Boundary for the Year 2016.

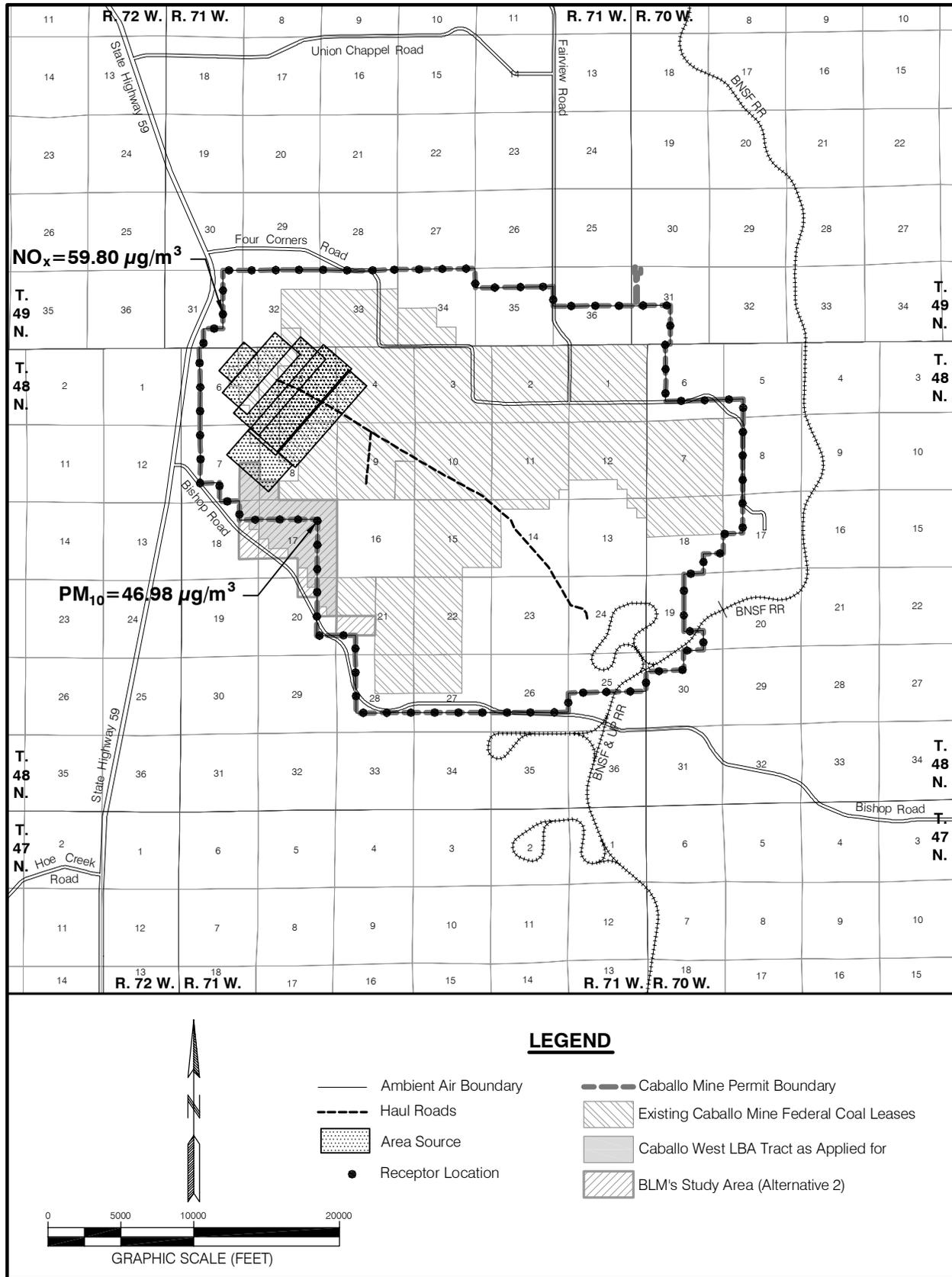


Figure ES-8. Maximum Modeled PM₁₀ and NO_x Concentrations at the Caballo Mine Ambient Air Boundary for the Year 2014.

the annual PM₁₀ NAAQS at the permitted 65-mmtpy production rate and there have been no exceedances of the 24-hour and annual PM₁₀ NAAQS. EPA has revoked the annual PM₁₀ standard of 50 µg/m³ but until the Wyoming enters into rulemaking to revise the WAAQS, that standard is still effective. The dispersion model showed a maximum concentration on the Cordero Rojo LNCM boundary of 45.6 µg/m³ in 2007 (Figure ES-9). There would be an increase in stripping ratio, which could increase fugitive dust emissions, but emissions would be expected to remain within daily and annual NAAQS limits.

Low-lying, gaseous orange clouds containing nitrogen oxides (NO_x) that can be transported by wind can sometimes form from overburden blasting prior to coal removal. EPA has expressed concerns that NO_x levels in some blasting clouds may be sufficiently high at times to cause human health effects. As a result of these incidents, Wyoming Department of Environment Quality/Land Quality Division (WDEQ/LQD) has directed some mines to take steps designed to mitigate the effects of NO₂ emissions occurring from overburden blasting. To date, there have been no reported events of public exposure to NO₂ from blasting activities at the Belle Ayr, Coal Creek, Caballo, and Cordero Rojo Mines. The WDEQ has not required the mines to implement any specific measures to control or limit public exposure to NO₂ from blasting.

Public exposure to emissions caused by surface mining operations is most likely to affect occupants of dwellings or businesses near the area of mining operations and travelers on publicly accessible roads and highways that pass through and near the area of the mining operations. There are occupied dwellings located approximately 0.75 mile north of the Belle Ayr North LBA Tract, and three school bus stops are located on Bishop Road, one within the LBA tract (Figure ES-10). There are occupied dwellings located approximately 0.2 mile and 1 mile west of the West Coal Creek LBA Tract, and two school bus stops are located on Hoadley Road, approximately 1 mile west of the LBA tract (Figure ES-11). There are occupied dwellings located over 0.6 mile west of the Caballo West LBA Tract, and three school bus stops are located along Bishop Road, adjacent to the LBA tract (Figure ES-12). There are occupied dwellings located approximately 0.4 mile south of the northern portion of the Maysdorf II LBA Tract and over 0.5 mile east of the LBA tract, and a school bus stop is located along Hoadley Road, approximately 1.25 miles south of the LBA tract (Figure ES-13).

Mining would disturb the coal aquifer and the aquifers in the overburden above the coal within the Belle Ayr North, West Coal Creek, Caballo West, and Maysdorf II LBA Tracts. The coal aquifer and any water-bearing strata in the overburden would be removed and replaced with unconsolidated backfill. A continuous cone of depression currently exists around the Belle Ayr, Coal Creek, Caballo, and Cordero Rojo Mines due to their closeness to each other and the cumulative drawdown effects from pit dewatering and nearby CBNG discharges. The extent of drawdown west of the mines that is specifically attributable to mine dewatering can no longer be defined due to much greater and areally extensive drawdown caused by CBNG development. Roughly 30

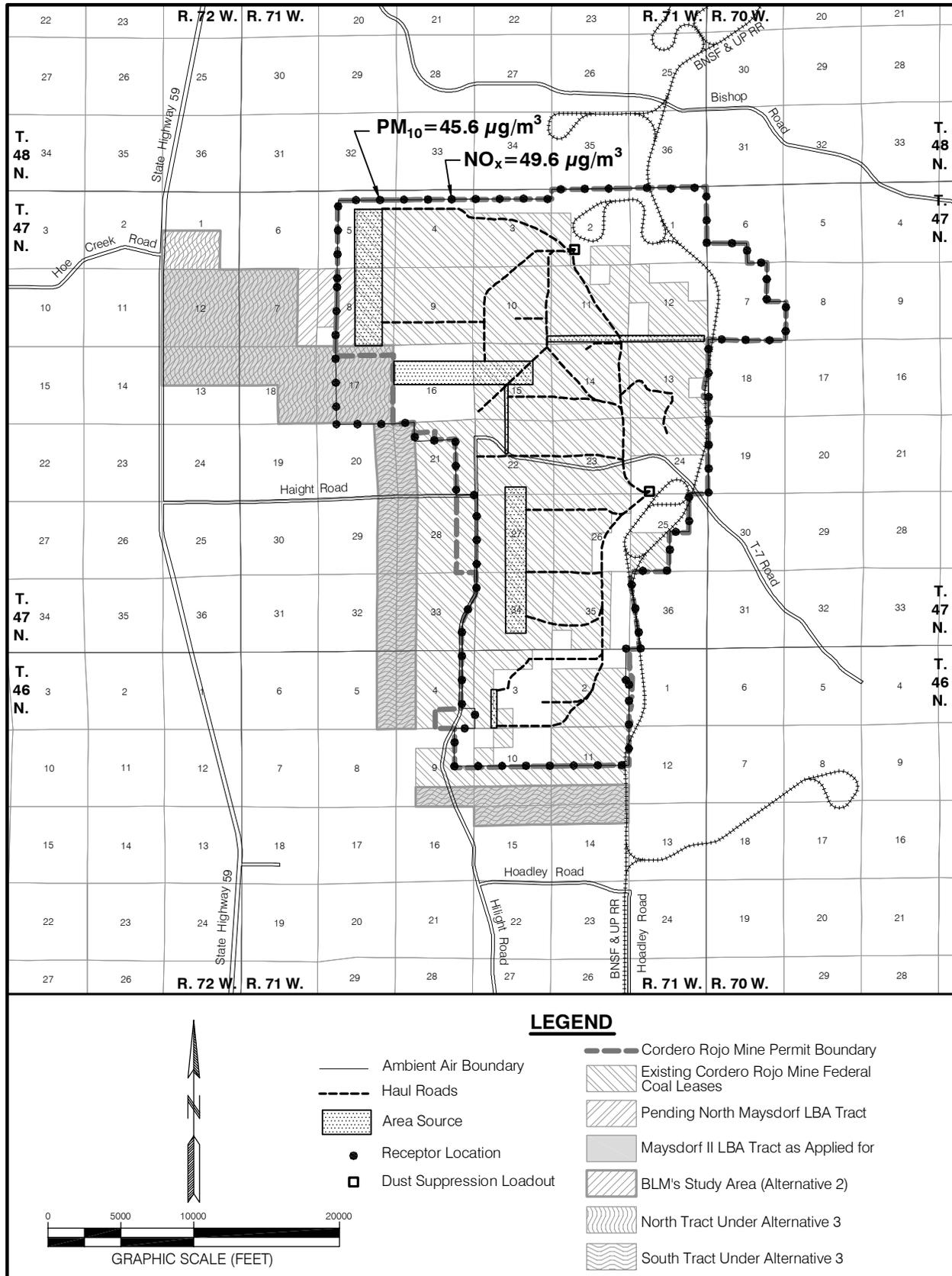


Figure ES-9. Maximum Modeled PM₁₀ and NO_x Concentrations at the Cordero Rojo Mine Ambient Air Boundary for the Year 2007.

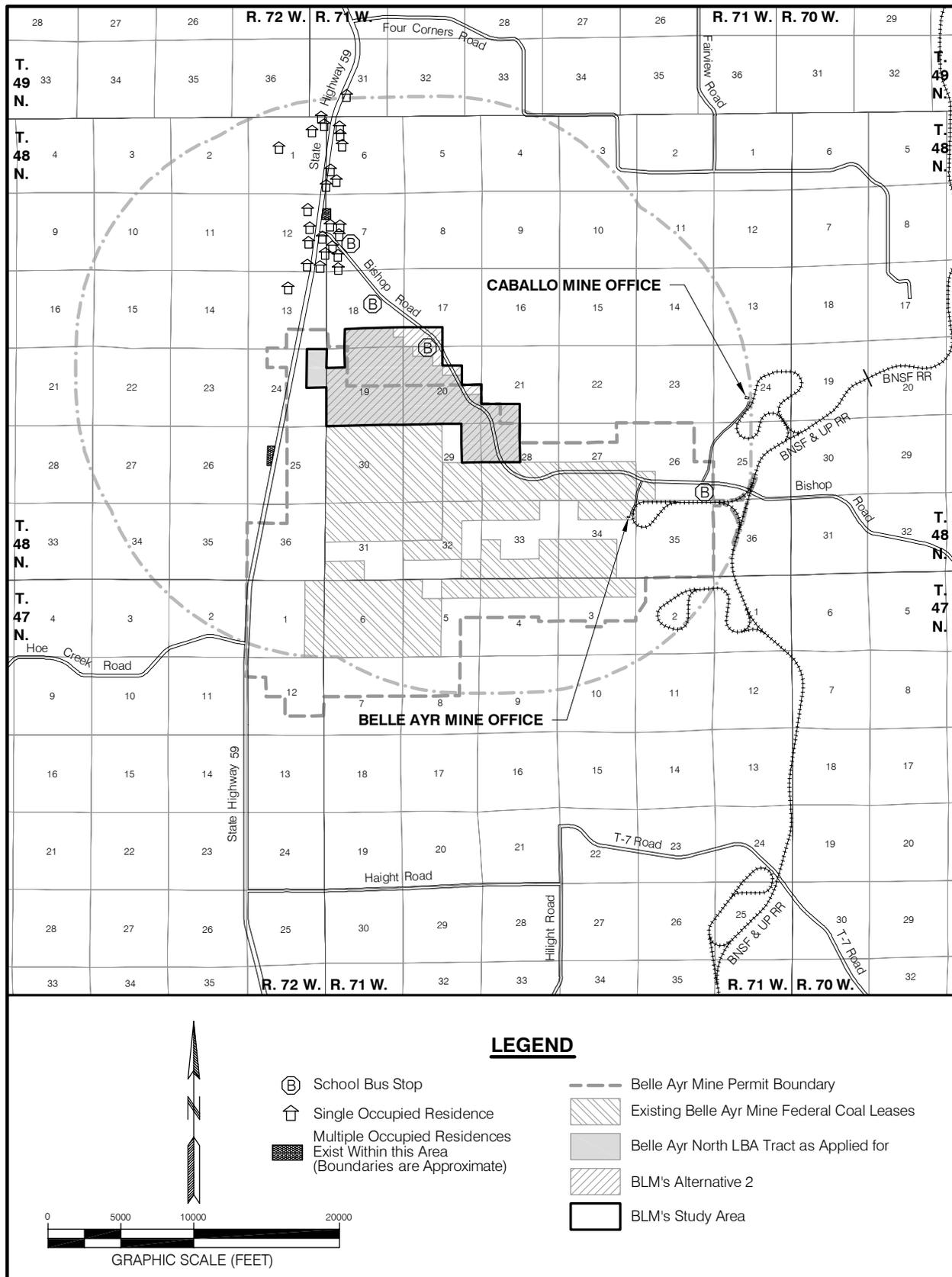


Figure ES-10. Residences, School Bus Stops, Public Roads, and Other Publicly Accessible Facilities Within 3 Miles of the Belle Ayr North LBA Study Area.

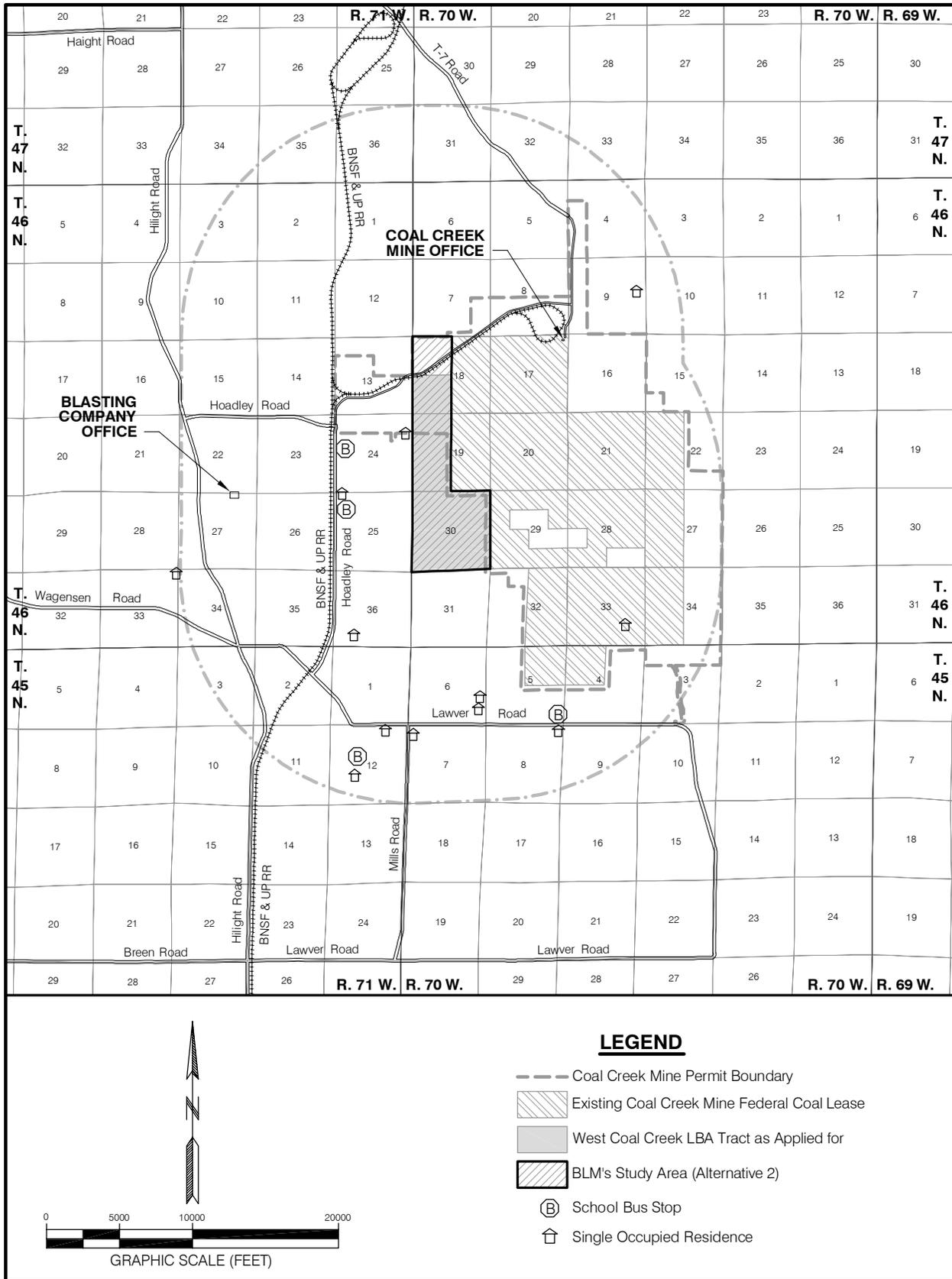


Figure ES-11. Residences, School Bus Stops, Public Roads, and Other Publicly Accessible Facilities Within 3 Miles of the West Coal Creek LBA Study Area.

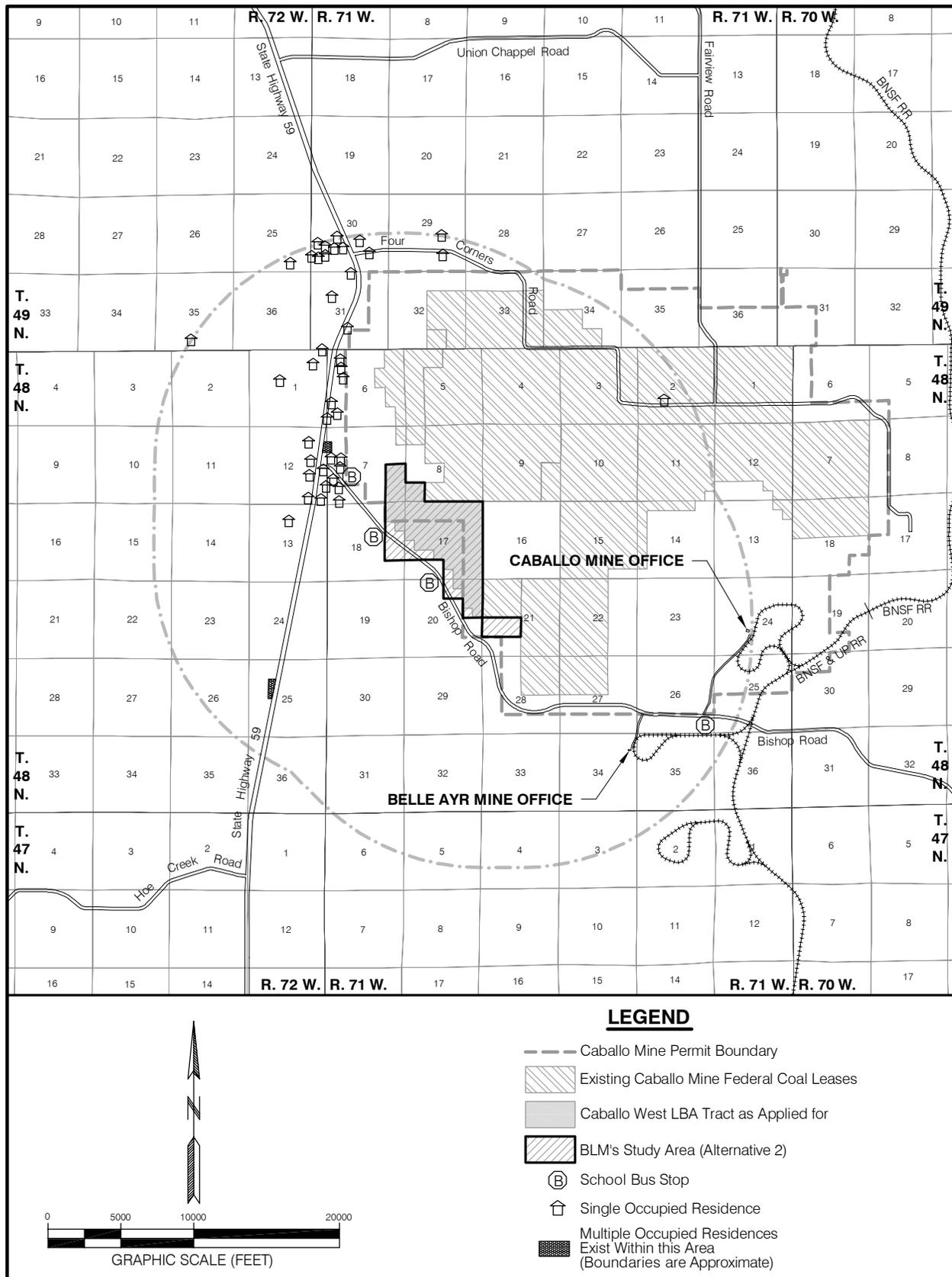


Figure ES-12. Residences, School Bus Stops, Public Roads, and Other Publicly Accessible Facilities Within 3 Miles of the Caballo West LBA Study Area.

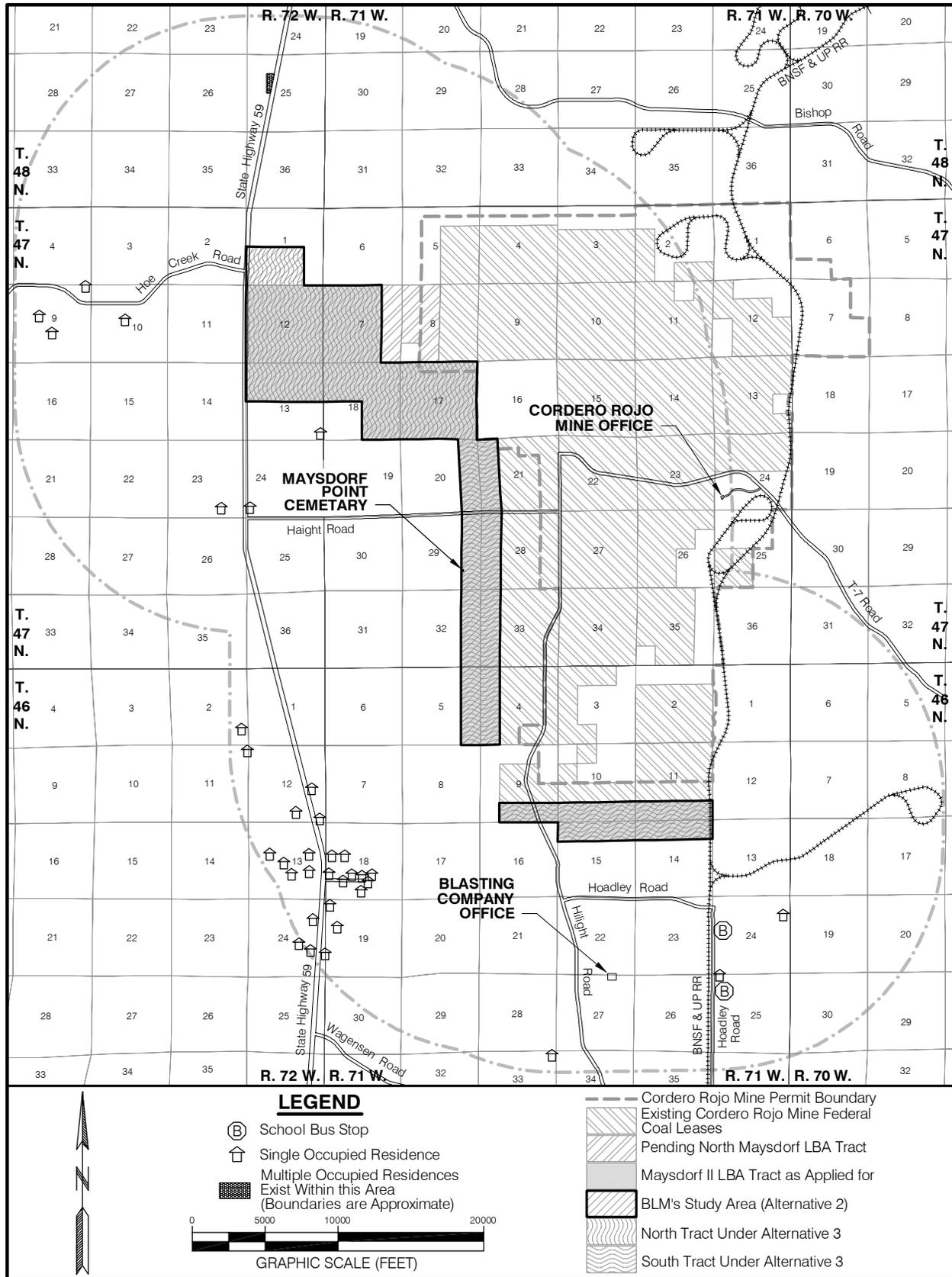


Figure ES-13. Residences, School Bus Stops, Public Roads, and Other Publicly Accessible Facilities Within 3 Miles of the Maysdorf II LBA Study Area.

years of surface mining and the more recent CBNG development have resulted in complete dewatering of the coal aquifer in localized areas, particularly near the mines' pits and where the coal seams are structurally highest. Figure ES-14 shows the extrapolated extent of life-of-mine cumulative drawdown within the Wyodak coal aquifer with the addition of the four LBA tracts discussed in this EIS, which are defined as the South Gillette Area Coal (SGAC) LBA tracts. The area of drawdown in the discontinuous overburden aquifers would be smaller. The data available indicate that, after reclamation, the hydraulic properties of the backfill would be comparable to the properties of the premining overburden and coal aquifers. Total dissolved solids (TDS) levels in groundwater from the backfill could initially be expected to be higher than in the premining overburden and coal aquifers, but would be expected to meet Wyoming Class III standards for use as livestock water.

Mining does not directly disturb the hydrogeologic units below the mineable coal, but many PRB mines use them for industrial water supply wells. In a few cases there have been drawdowns in the subcoal aquifer due to leakage into mine pits, dewatering, and CBNG development (BLM 2001). All four of the applicant mines located within the general South Gillette analysis area utilize water supply wells completed in aquifers stratigraphically below the Wyodak coal. If these four LBA tracts are leased and mined by the applicants, water would be produced from these wells for a longer period of time, but none of the mines would require additional sub-coal wells to continue mining and reclaiming operations.

The Belle Fourche River and its tributaries drain the general South Gillette analysis area. The Belle Fourche River has been diverted around active pits and mine facilities within the existing Cordero Rojo Mine permit area. The river would also be diverted during mining of the Maysdorf II LBA Tract, but would be restored during reclamation. After mining and reclamation are complete, surface water flow, quality, and sediment discharge would approximate premining conditions.

Surface water quality varies with flow and/or season. Changes in runoff characteristics and sediment discharges would occur during mining of the LBA tracts, and erosion rates could reach high values on the disturbed areas as a result of vegetation removal. However, state and federal regulations require that surface runoff from mined lands be treated to meet effluent standards, so sediment would be deposited in ponds or other sediment-control devices.

AVF investigations conducted within the general South Gillette analysis area have identified an AVF that occurs along Duck Nest Creek on the Belle Ayr North LBA Tract. AVFs have also been identified along Tisdale and Caballo Creeks; however, those lands are located at considerable distances downstream of any of the LBA tracts. Approximately 14.9 acres of declared AVF on Duck Nest Creek are located within the Belle Ayr North general analysis area, but the

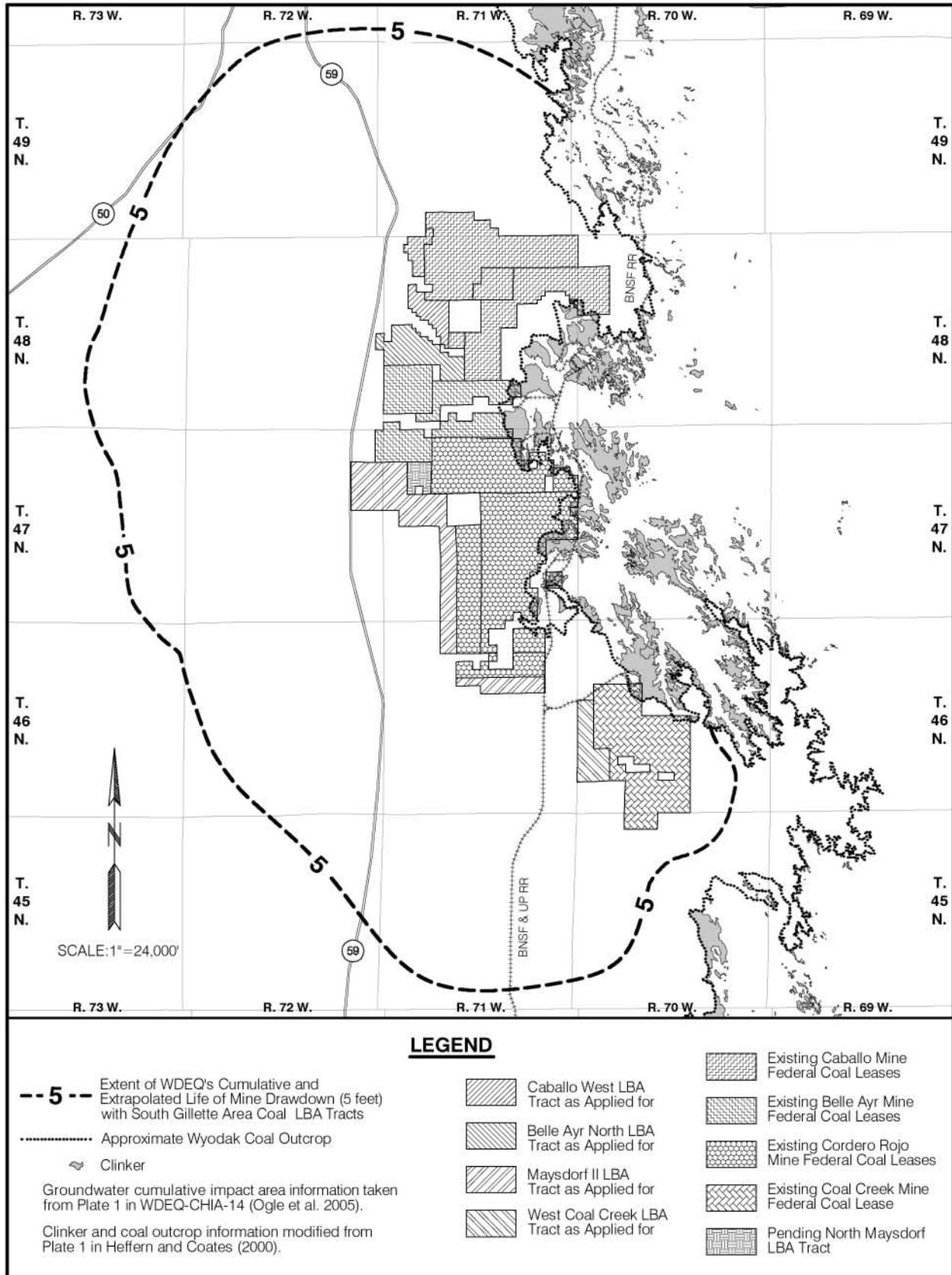


Figure ES-14. Extrapolated Extent of Life of Mine Cumulative Drawdown Within the Wyodak Coal Aquifer With the Addition of the South Gillette Area Coal Lease Applications.

WDEQ/LQD has declared them not to be significant to farming (WDEQ 1988). No other AVFs have been identified within the LBA tracts.

A preliminary wetlands inventory, based on U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping and vegetation mapping in the field, was conducted for the wetland analysis area for each tract. A total of approximately 193.9 acres of Waters of the U.S., including a total of 14.4 acres of jurisdictional Waters of the U.S., occur within the wetlands analysis area for the Belle Ayr North LBA Tract. Approximately 11.9 of those acres are jurisdictional wetlands that occur along the watercourse of Duck Nest Creek. The 2.5 acres of jurisdictional other Waters of the U.S. that did not qualify as jurisdictional wetlands consist primarily of open water that is held within the in-channel impoundments and intermittent pools along Duck Nest Creek. The non-jurisdictional Waters of the U.S. contained in the wetlands analysis area consists of the internally drained playas and total approximately 179.5 acres in area. As a result of recent court directives, playas are no longer identified as jurisdictional Waters of the U.S. under Section 404 of the Clean Water Act (CWA). These non-jurisdictional wetland features can, however, have significant biological and hydrological importance.

A total of approximately 16.9 acres of wetlands and other Waters of the U.S. occur within the West Coal Creek wetlands analysis area. Non-jurisdictional wetlands and other Waters of the U.S. were included in the above acreages and were not identified separately because only the Corp of Engineers (COE) has the authorization to make such determinations. Non-jurisdictional wetlands are generally associated with internally drained depressions/playas that are isolated, and non-jurisdictional other Waters of the U.S. generally occur where areas of open water are ponded in a depression/playa area. No internally drained playas have been identified within the West Coal Creek general analysis area.

A total of approximately 15.0 acres of Waters of the U.S., including a total of 8.6 acres of jurisdictional Waters of the U.S., occur within the entire Caballo West wetlands analysis area. Approximately 6.5 of those acres are jurisdictional wetlands that occur along the water courses of Tisdale Creek. A playa, located adjacent to the LBA tract as applied for and within the wetlands analysis area, was delineated in 1996 as a jurisdictional wetland, but was later declared non-jurisdictional by the COE. Approximately 6.4 acres of non-jurisdictional wetlands are included in this playa.

A total of approximately 140.1 acres of wetlands and other Waters of the U.S. occur within the Maysdorf II wetlands analysis area. Of this 140.1 acres identified, approximately 133.5 acres are vegetated wetlands and the remaining 6.6 acres are other Waters of the U.S. Non-jurisdictional wetlands and other Waters of the U.S. were included in the above acreages and were not identified separately because only the COE has the authorization to make such determinations. Non-jurisdictional wetlands are generally associated with internally drained depressions/playas that are isolated, and non-jurisdictional

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other Waters of the U.S. generally occur where areas of open water are ponded in a depression/playa area. Approximately 49.9 acres of playas occur in the area, and those internally drained areas would probably be considered non-jurisdictional by the COE.

Existing wetlands located in the LBA tracts would be destroyed by mining operations. Jurisdictional wetlands that are disturbed by mining must be replaced during the reclamation process.

Consequences to soil resources from mining the LBA tracts would include changes in the physical, biological, and chemical properties. Following reclamation, the soils would be unlike premining soils in texture, structure, color, accumulation of clays, organic matter, microbial populations, and chemical composition. The replaced topsoil would be more uniform in type, thickness, and texture. It would be adequate in quantity and quality to support planned postmining land uses (i.e., wildlife habitat and rangeland).

The predominant vegetation types, in terms of total acres of occurrence in the combined vegetation general analysis areas, are the Sagebrush/Grassland (38.1 percent) and Sandy Grassland (18.4 percent). Common plant species on these types include crested wheatgrass, smooth brome, needleandthread, threadleaf sedge, western wheatgrass, blue grama, and cheatgrass brome. Dominant shrubs/subshrubs in the Sagebrush/Grassland and Sandy Grassland vegetation communities include Wyoming big sagebrush and fringed sage. Lichens and manyspine plains pricklypear cactus are frequently large components of the vegetation cover. Mining would progressively remove this native vegetation. Reclamation and revegetation of mined areas would occur contemporaneously with mining on adjacent lands. Reestablished vegetation would be dominated by species mandated in the reclamation seed mixtures, which are approved by the WDEQ/LQD. The majority of these species would be native to the LBA tracts. Initially, the reclaimed land would be dominated by grassland vegetation, which would be less diverse than the premining vegetation. Estimates for the time it would take to restore sagebrush to premining density levels range from 20 to 100 years. An indirect long-term impact associated with this vegetative change would potentially be a decrease in available habitat for shrub-dependent species. However, a diverse, productive, and permanent vegetative cover would be established on the LBA tracts within about 10 years following reclamation, prior to release of the final reclamation bond. The decrease in plant diversity would not seriously affect the potential productivity of the reclaimed areas, and the proposed postmining land uses (wildlife habitat and rangeland) should be achieved even with the changes in vegetation composition and diversity. The reclamation plans for the LBA tracts would also include steps to control invasion by weedy (invasive, nonnative) plant species.

Direct impacts of surface coal mining on wildlife occur during mining and are short term. They include road kills by mine-related traffic, direct losses of less mobile wildlife species, restrictions on wildlife movement created by fences,

spoil piles and pits, displacement of wildlife from existing habitat in areas of active mining (including abandonment of nests or nesting and breeding habitat for birds), increased competition between animals in areas adjacent to mining operations, and increased noise, dust, and human presence. Habitat for aquatic species would also be lost during mining operations. Indirect impacts are longer term and include alterations in topography and vegetative cover following reclamation, which may decrease wildlife carrying capacity and habitat diversity. The Belle Ayr North, West Coal Creek, Caballo West, and Maysdorf II LBA Tracts do not include any unique or crucial big game habitat, and habitat disturbance would be incremental, with reclamation progressing as new disturbance occurs. The West Coal Creek LBA Tract is adjacent to a sage-grouse Core Population Area, as defined by the Sage-Grouse Implementation Team (Sage-Grouse Implementation Team 2008). There are 18 sage-grouse leks that have been documented within the combined evaluation area. Five of those 18 sites are classified by the Wyoming Game and Fish Department (WGFD) as historical, and 5 others have been largely inactive over the last 10-12 years. The eight leks with the most recent activity are all more than 2 miles from the specific wildlife general analysis area of each LBA tract. In the long term, following reclamation, wildlife carrying capacity and habitat diversity may be reduced due to gentler topography, less diverse vegetative cover, and reduction in sagebrush density. Efforts have been initiated in recent years by mining companies to increase the diversity of post-mine topography and to increase the amount of sagebrush in the reclamation.

T&E plant and animal species that could be present on the tract include the Ute ladies'-tresses orchid and black-footed ferret. Areas of suitable habitat for the Ute ladies'-tresses orchid within the Belle Ayr North, West Coal Creek, Caballo West, and Maysdorf II LBA Tracts and adjacent study areas were surveyed in August 2006, July 2007, August 2007, and in August 2005 and 2006, respectively, and no individuals were located. The black-footed ferret is a nocturnally active mammal that depends almost entirely upon the prairie dog for its survival. No black-tailed prairie dog colonies are currently present on the LBA tracts as proposed and the area added by action alternatives. One small colony (approximately 40 acres) is within the Maysdorf II wildlife general analysis area and one small colony (approximately 56 acres) is located just over 1 mile southwest of the Maysdorf II wildlife general analysis area. One small colony (approximately 34 acres in size) is located approximately 1 mile south of the West Coal Creek LBA Tract study area.

Active mining would preclude other land uses. Recreational and grazing uses of the LBA tracts would be severely limited during mining. Oil and gas development would be curtailed and CBNG that is not recovered prior to mining would be irretrievably lost as the coal is removed. The surface of the tracts as applied for and approximately 97 percent of the tracts under the action alternatives is privately owned.

Within 10 years after initiation of each reclamation phase, rangeland and wildlife use would return to near premining levels. The cumulative impacts of

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energy development (coal mining, oil and gas) in the PRB are and will continue to contribute to a reduction in hunting opportunities for some animals (pronghorn, mule deer, and sage grouse).

The Belle Ayr North, West Coal Creek, Caballo West, and Maysdorf II LBA Tracts have been surveyed for cultural resources at the Class I level. A majority of the tracts have been surveyed to a Class III level. A total of 74 cultural sites and 60 isolated finds were documented in the survey areas. Of the 74 cultural sites, 44 are prehistoric, 21 are historic, and nine are multi-component. Seven of the sites are recommended as eligible to the National Register of Historic Places (NRHP) and six are unevaluated. Until consultation with State Historic Preservation Office (SHPO) has occurred and agreement regarding NRHP eligibility has been reached, all sites would be protected from disturbance. Any area within the LBA tracts not yet surveyed to a Class III level would require a Class III survey prior to disturbance.

No sites of Native American religious or cultural importance have been identified on the Belle Ayr North, West Coal Creek, Caballo West, and Maysdorf II LBA Tracts. Appropriate action must be taken to address concerns related to those sites if such sites or localities are identified at a later date.

Some mining activities on the Belle Ayr North, West Coal Creek, Caballo West, and Maysdorf II LBA Tracts would be visible from Wyoming Highway 59 and several county roads in the vicinity of the tracts. Mining would affect landscapes classified by BLM as visual resource management (VRM) Class V, and the landscape character would not be significantly changed following reclamation. No unique visual resources have been identified on or near the LBA tracts.

There are occupied dwellings and businesses located in the vicinity of the Belle Ayr North, West Coal Creek, Caballo West, and Maysdorf II LBA Tracts (Figures ES-11, ES-12, ES-13, and ES-14, respectively). These facilities would experience an adverse noise impact if mining activities (particularly blasting) occur within 2,500 ft of them under either the Proposed Actions or action alternatives.

Leasing the Belle Ayr North, West Coal Creek, Caballo West, and Maysdorf II LBA Tracts would extend the length of time that coal is shipped from the permitted Belle Ayr, Coal Creek, Caballo, and Cordero Rojo Mines, respectively, which would extend the length of time that coal transportation facilities would be required. Vehicular traffic to and from the mines would continue for over 10 additional years, depending on the LBA tracts involved and which alternatives are selected. Lands within 100 feet of the outside line of the ROW of a public road are considered unsuitable for leasing; however, they could be included in a tract to allow recovery of economically mineable coal outside of the ROW and buffer zone. Active pipelines and utility/power transmission lines would have to be relocated in accordance with previous agreements, or agreements would have to be negotiated for their removal or relocation.

Royalty and bonus payments for the coal in the LBA tract would be collected by the federal government and split with the state. Assuming an average coal price of \$9.98 per ton recovered and a potential range of bonus payments of 30 to 97 cents per ton, the potential additional federal revenues from the four LBA tracts would range from approximately \$1.1 to \$1.5 billion, depending on the alternative selected and the bonus price at the time the coal is leased. The potential additional revenue to the state of Wyoming from the four LBA tracts would range from \$1.4 to \$1.8 billion, depending on the alternative selected, the bonus price at the time the coal is leased, and the selling price of the coal. Mine life and employment (at or slightly above current levels) would be extended for over 10 additional years, depending on the LBA tracts involved and which alternatives are selected.

With regard to Environmental Justice issues, it was determined that potentially adverse impacts do not disproportionately affect minorities, low-income groups or Native American tribes or groups. No tribal lands or Native American communities are included in this area, and no Native American treaty rights or Native American trust resources are known to exist for this area.

Under the No Action Alternatives, the coal lease applications would be rejected and the areas contained in the applications would not be offered for lease at this time. The tracts could be nominated for lease again in the future. Under the No Action Alternatives, the impacts described in the preceding paragraphs to topography and physiology, geology and minerals, soils, air quality, water resources, AVFs, wetlands, vegetation, wildlife, T&E species, land use and recreation, cultural resources, Native American concerns, paleontological resources, visual resources, noise, transportation, and socioeconomics would occur due to mining the existing Belle Ayr, Coal Creek, Caballo, and Cordero Rojo Mine coal leases, but these impacts would not be extended by mining onto the Belle Ayr North, West Coal Creek, Caballo West, and Maysdorf II LBA Tracts, respectively.

If impacts are identified during the leasing process that are not mitigated by existing required mitigation measures, BLM can include additional mitigation measures, in the form of stipulations on a new lease, within the limits of its regulatory authority. Any special stipulations identified by BLM where additional or increased monitoring measures are recommended to be added to the BLM leases are included in Appendix D of this EIS document.

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

Since decertification of the Powder River Federal Coal Region in 1990, 19 coal leases containing more than 5.7 billion tons of federal coal have been issued following competitive sealed-bid sales. Three exchanges of federal coal in the Wyoming portion of the Powder River Federal Coal Region have also been

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completed. Thirteen additional coal lease applications, including the Belle Ayr North, West Coal Creek, Caballo West, and Maysdorf II LBA Tract applications, are currently pending. The pending LBA applications contain over 4.4 billion tons of coal.

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

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

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

The PRB Coal Review air quality study documents the modeled air quality impact of existing operations during 2002 and of projected development activities in 2010. The model was used to evaluate impacts of existing and projected source emissions on several source groups, including near-field receptors in Wyoming and Montana, receptors in nearby federally designated "Class I" areas, and receptors at "Class II" sensitive areas. The EPA guideline CALPUFF model system was used for the modeling analysis.

The existing regional air quality conditions are generally very good, but the modeling showed substantial impacts at some receptors for years 2002 and 2010. Table ES-8 presents the maximum modeled impacts on ambient air quality at the near-field receptors in Wyoming and Montana for 2002 and for the 2010 upper and lower coal development scenarios. Table ES-9 lists the projected modeled visibility impacts for 2002 for all analyzed Class I and sensitive Class II areas. For the upper and lower coal production scenarios, it shows the number of additional days that the impacts were projected to be greater than 1.0 dv (10 percent in extinction) for each site in 2010.

Table ES-8. Projected Maximum Potential Near-field Impacts ($\mu\text{g}/\text{m}^3$).

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

¹ No standard or increment.

Bold values indicate exceedance of Ambient Air Quality Standards (AAQS).

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

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Table ES-9. Modeled Change in Visibility Impacts at Class I and Sensitive Class II Areas.

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

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

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

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

The PRB Coal Review used the Regional Economic Models Inc. (REMI) Policy Insight regional economic model to project cumulative employment and population levels and associated impacts in the PRB for the upper and lower coal production scenarios in 2010, 2015, and 2020. Table ES-10 presents the recent and projected population levels for the counties included in the PRB Coal Review socioeconomic analysis.

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

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Table ES-10. Recent and Projected PRB Population.

Year	Campbell County	Converse County	Crook County	Johnson County	Sheridan County	Weston County	Total Study Area
Census							
2000	33,698	12,104	5,895	7,108	26,606	6,642	92,053
2003	36,438	12,314	5,986	7,554	27,115	6,671	96,078
2007	40,433	12,868	6,284	8,142	27,998	6,854	102,579
Lower Coal Production Scenario							
2010	45,925	13,103	6,542	8,389	28,459	7,108	109,526
2015	48,905	13,671	6,759	8,867	30,016	7,174	115,392
2020	50,995	14,193	6,989	9,326	31,467	7,208	120,178
Upper Coal Production Scenario							
2010	47,662	13,160	6,570	8,424	28,579	7,137	111,532
2015	51,558	13,763	6,802	8,924	30,214	7,219	118,480
2020	54,943	14,313	7,045	9,403	31,733	7,266	124,703
Source: U.S. Census Bureau (2007 - historical data) and PRB Coal Review Task 3C Report (BLM 2005e)							