

APPENDIX A

**FEDERAL AND STATE PERMITTING
REQUIREMENTS AND AGENCIES**

APPENDIX A: FEDERAL AND STATE AGENCIES & PERMITTING REQUIREMENTS	
Agency	Lease/Permit/Action
FEDERAL	
Bureau of Land Management	Coal Lease Resource Recovery & Protection Plan Scoria Sales Contract Exploration Drilling Permit
Office of Surface Mining Reclamation and Enforcement	Preparation of MLA Mining Plan Approval Document SMCRA Oversight
Office of the Secretary of the Interior	Approval of MLA Mining Plan
Mine Safety and Health Administration	Safety Permit and Legal ID Ground Control Plan Major Impoundments Explosives Use and Storage Permit
Bureau of Alcohol, Tobacco, and Firearms	Explosive's Manufacturer's License Explosives Use and Storage Permit
Federal Communication Commission	Radio Permit: Ambulance Mobile Relay System Radio License
Nuclear Regulatory Commission	Radioactive By-Products Material License
Army Corps of Engineers	Authorization of Impacts to Wetlands and Other Waters of the U.S.
Department of Transportation	Hazardous Waste Shipment Notification
Federal Aviation Administration	Radio Tower Permits
STATE	
State Land Commission	Coal Lease Scoria Lease
Department of Environmental Quality-Land Quality Division	Permit and License to Mine
Department of Environmental Quality-Air Quality Division	Air Quality Permit to Operate Air Quality Permit to Construct
Department of Environmental Quality-Water Quality Division	National Pollutant Discharge Elimination System Water Discharge Permit Permit to Construct Sedimentation Pond Authorization to Construct Septic Tank & Leach Field Authorization to Construct and Install a Public Water Supply and Sewage Treatment System
Department of Environmental Quality-Solid Waste Management Program	Solid Waste Disposal Permit-Permanent and Construction
State Engineer's Office	Appropriation of Surface Water Permits Appropriation of Ground Water Permits
Industrial Siting Council	Industrial Siting Certificate of Non-Jurisdiction
Department of Health	Radioactive Material Certificate of Registration

APPENDIX B

**UNSUITABILITY CRITERIA
FOR THE MAYSDORF LBA TRACT**

APPENDIX B. UNSUITABILITY CRITERIA FOR THE MAYSDORF LBA TRACT

UNSUITABILITY CRITERIA	GENERAL RECOMMENDATIONS FOR BUFFALO RESOURCE AREA (BLM 1985, 2001a)	FINDINGS FOR MAYSDORF LBA TRACT
<p>1. Federal Land Systems. With certain exceptions that do not apply to this tract, all federal lands included in the following systems are unsuitable for mining: National Parks, National Wildlife Refuges, National System of Trails, National Wilderness Preservation System, National Wild and Scenic Rivers, National Recreation Areas, Lands acquired through the Land and Water Conservation Fund, National Forests and Federal lands in incorporated cities, towns and villages.</p>	<p>There are Federal lands located around Gillette, Sheridan, and Wright which were determined to be unsuitable under this criterion.</p>	<p>None of the federal lands determined to be unsuitable under Criterion 1 are present on the Maysdorf LBA Tract, and therefore there are no unsuitable findings.</p>
<p>2. Rights-Of-Way and Easements. Federal lands that are within ROWs or easements or within surface leases for residential, commercial, industrial or other public purposes, on federally owned surface, are unsuitable for mining.</p>	<p>Portions of the BNSF & UP railroad ROWs, the Tri-County 230-Kv transmission line ROW, the Wyoming State Highway 450 ROW, and the I-90 ROW on federal surface were found to be unsuitable under this criterion within the general review area.</p>	<p>The portions of the Tri-County 230-Kv transmission line ROW, the Wyoming State Highway 450 ROW, and the I-90 ROW that were determined to be unsuitable are not located on the Maysdorf LBA Tract. The Maysdorf LBA Tract includes a portion of the BNSF & UP railroad ROW. This ROW was designated unsuitable for mining and the lease will be stipulated to exclude mining within the ROW.</p>
<p>3. Buffer Zones for Rights-Of-Way, Communities, and Buildings. Federal lands within 100 ft of a ROW of a public road or a cemetery; or within 300 ft of any public building, school, church, community or institutional building or public park; or within 300 ft of an occupied dwelling are unsuitable for mining.</p>	<p>Portions of Wyoming State Highway 450, Interstate Highway I-90, and one cemetery were found to be unsuitable under this criterion. Decisions were deferred on other highways/roads, occupied dwellings, and one school.</p>	<p>Highway 450, I-90, and the cemetery are not located on the Maysdorf LBA Tract. No occupied dwellings, other highways/roads, or schools are located on the tract. Therefore, there are no unsuitable findings under Criterion 3 for the Maysdorf LBA Tract.</p>
<p>4. Wilderness Study Areas. Federal lands designated as wilderness study areas are unsuitable for mining while under review for possible wilderness designation.</p>	<p>No lands in the general review area are within a wilderness study area.</p>	<p>There are no unsuitable findings under Criterion 4 for the Maysdorf LBA Tract.</p>
<p>5. Scenic Areas. Scenic federal lands designated by visual resource management analysis as Class I (outstanding visual quality or high visual sensitivity) but not currently on National Register of Natural Landmarks are unsuitable.</p>	<p>No lands in the general review area meet the scenic criteria as outlined.</p>	<p>There are no unsuitable findings under Criterion 5 for the Maysdorf LBA Tract.</p>
<p>6. Land Used for Scientific Study. Federal lands under permit by the surface management agency and being used for scientific studies involving food or fiber production, natural resources, or technology demonstrations and experiments are unsuitable for the duration of the study except where mining would not jeopardize the purpose of the study.</p>	<p>Two vegetation monitoring study sites on the TBNG (NE¼ of Sec. 1, T.41N., R.71W. and NW¼ NW¼ of Sec. 30, T.41N., R.69W.), and the Hoe Creek Site (Sec. 7, T.47N., R.72W.) were found to be unsuitable under this criterion.</p>	<p>The vegetation monitoring sites and the Hoe Creek site are not located on the Maysdorf LBA Tract. There are no unsuitable findings under Criterion 6 for the Maysdorf LBA Tract.</p>
<p>7. Cultural Resources. All publicly or privately owned places which are included in or are eligible for inclusion in the NRHP and an appropriate buffer zone are unsuitable.</p>	<p>On the basis of the consultation with SHPO, there were no unsuitable findings under this criterion in the general review area. Continue using the "Standard Archeological Stipulation" to new leases.</p>	<p>There are no unsuitable findings under Criterion 7 for the Maysdorf LBA Tract. The "Standard Archeological Stipulation" should be applied if this tract is leased.</p>

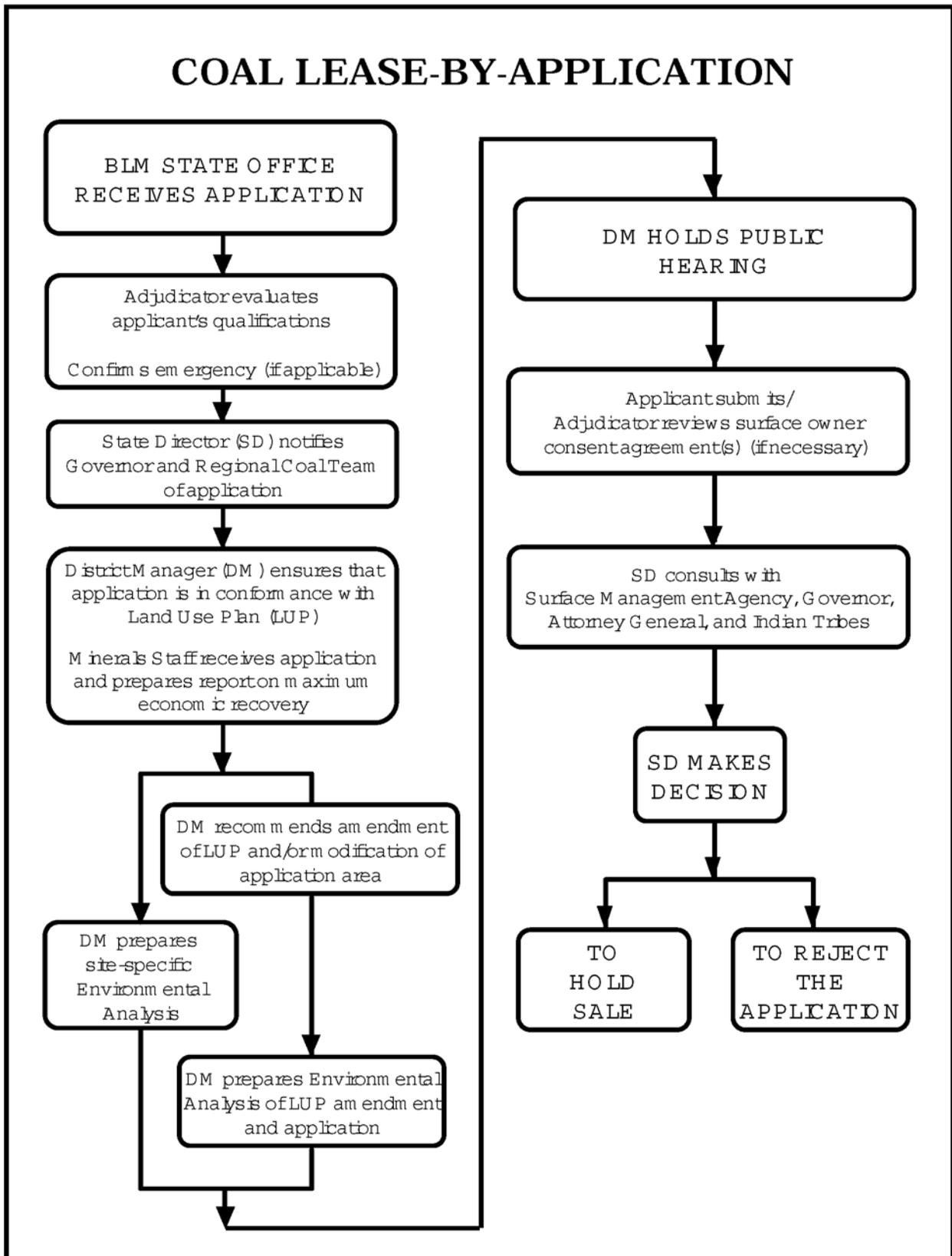
Appendix B

UNSUITABILITY CRITERIA	GENERAL RECOMMENDATIONS FOR BUFFALO RESOURCE AREA (BLM 1985, 2001a)	FINDINGS FOR MAYSDORF LBA TRACT
<p>8. Natural Areas. Federal lands designated as natural areas or National Natural Landmarks are unsuitable.</p>	<p>No lands in the general review area are designated as natural areas or as National Natural Landmarks.</p>	<p>There are no unsuitable findings under Criterion 8 for the Maysdorf LBA Tract.</p>
<p>9. Critical Habitat for Threatened or Endangered Plant and Animal Species. Federally designated critical habitat for threatened or endangered plant and animal species, and scientifically documented essential habitat for threatened or endangered species are unsuitable.</p>	<p>There is no federally designated critical habitat for threatened or endangered plant or animal species within the general review area.</p>	<p>There are no unsuitable findings under Criterion 9 for the Maysdorf LBA Tract.</p>
<p>10. State Listed Threatened or Endangered Species. Federal lands containing habitat determined to be critical or essential for plant or animal species listed by a state pursuant to state law as threatened or endangered shall be considered unsuitable.</p>	<p>Wyoming does not maintain a state list of threatened or endangered species of plants or animals. Therefore, this criterion does not apply.</p>	<p>There are no unsuitable findings under Criterion 10 for the Maysdorf LBA Tract.</p>
<p>11. Bald or Golden Eagle Nests. An active bald or golden eagle nest and appropriate buffer zone are unsuitable unless the lease can be conditioned so that eagles will not be disturbed during breeding season or unless golden eagle nests will be moved.</p>	<p>Defer suitability decisions and evaluate bald and golden eagle nests on a case by case basis at the time of leasing. Establish buffer zones around nests during mining and reclamation planning after consultation with USFWS.</p>	<p>There are currently no bald eagle nests and inactive golden eagle nests on the Maysdorf LBA Tract. Evaluate suitability prior to lease issuance during consultation with USFWS.</p>
<p>12. Bald and Golden Eagle Roost and Concentration Areas. Bald and golden eagle roost and concentration areas on federal lands used during migration and wintering are unsuitable unless mining can be conducted in such a way as to ensure that eagles shall not be adversely disturbed.</p>	<p>Defer suitability decisions and evaluate bald and golden eagle roost areas on a case by case basis prior to lease issuance. Establish buffer zones after consultation with USFWS.</p>	<p>There are no identified roost sites on the Maysdorf LBA Tract. Evaluate suitability prior to lease issuance during consultation with USFWS.</p>
<p>13. Falcon Nesting Sites and Buffer Zones. Federal lands containing active falcon (excluding kestrel) cliff nesting sites and a suitable buffer zone shall be considered unsuitable unless mining can be conducted in such a way as to ensure the falcons will not be adversely affected.</p>	<p>Defer suitability decisions on falcon nesting sites and evaluate on a case by case basis prior to lease issuance. Establish buffer zones around nesting sites after consultation with USFWS.</p>	<p>No falcon nesting sites have been identified on the Maysdorf LBA Tract. There are no unsuitable findings under Criterion 13 for the Maysdorf LBA Tract.</p>
<p>14. Habitat for Migratory Bird Species. Federal lands which are high priority habitat for migratory bird species of management concern in Wyoming shall be considered unsuitable unless mining can be conducted in such a way as to ensure that migratory bird habitat will not be adversely affected during the period it is in use.</p>	<p>Defer suitability decisions on high priority habitat for migratory bird species of management concern in Wyoming and evaluate on a case by case basis prior to lease issuance. Establish buffer zones for nesting areas during mining and reclamation planning after consultation with USFWS.</p>	<p>Evaluate suitability during consultation with USFWS.</p>

UNSUITABILITY CRITERIA	GENERAL RECOMMENDATIONS FOR BUFFALO RESOURCE AREA (BLM 1985, 2001a)	FINDINGS FOR MAYSDORF LBA TRACT
<p>15. Fish and Wildlife Habitat for Resident Species. Federal lands which the surface management agency and state jointly agree are fish, wildlife and plant habitat of resident species of high interest to the state, and which are essential for maintaining these priority wildlife species, shall be considered unsuitable unless mining can be conducted in such a way as to ensure no long-term impact on the species being provided will occur.</p>	<p>Defer suitability decisions on grouse leks and evaluate on a case by case basis prior to lease issuance. Establish buffer zones after consultation with WGFD.</p>	<p>There are no active or inactive sage grouse leks on the Maysdorf LBA Tract. There are currently three active sage grouse leks identified on lands adjacent to the LBA tract: one within ¼ mile; one within ¾ mile; and one just over one mile of the Maysdorf LBA Tract. Evaluate this criterion prior to lease issuance. Establish buffer zones during mining and reclamation planning after consultation with WGFD.</p>
<p>16. Floodplains. Federal lands in riverine, coastal, and special floodplains shall be considered unsuitable where it is determined that mining could not be undertaken without substantial threat of loss of life or property.</p>	<p>The BLM and USDA-FS have determined that the identified floodplains in the general review area could potentially be mined. Therefore, all lands within the general review area are considered suitable.</p>	<p>Site-specific stipulations and resource protection safeguards will be applied if necessary during mining and reclamation planning. There are no unsuitable findings under Criterion 16 for the Maysdorf LBA Tract.</p>
<p>17. Municipal Watersheds. Federal lands which have been committed by the surface management agency to use as municipal watersheds shall be considered unsuitable.</p>	<p>There are no designated municipal watersheds in the general review area.</p>	<p>There are no unsuitable findings under Criterion 17 for the Maysdorf LBA Tract.</p>
<p>18. National Resource Waters. Federal lands with national resource waters, as identified by states in their water quality management plans, and 1/4-mile buffer zones shall be unsuitable.</p>	<p>There are no designated national resource waters within the general review area.</p>	<p>There are no unsuitable findings under Criterion 18 for the Maysdorf LBA Tract.</p>
<p>19. Alluvial Valley Floors. Federal lands identified by the surface management agency, in consultation with the state, as AVFs where mining would interrupt, discontinue or preclude farming, are unsuitable. Additionally, when mining federal lands outside an AVF would materially damage the quality or quantity of water in surface or underground water systems that would supply AVFs, the land shall be considered unsuitable.</p>	<p>Consider areas determined to contain AVFs significant to farming as unsuitable. Defer decisions on other AVFs and analyze on a case-by-case basis prior to lease issuance.</p>	<p>No potential AVFs have been identified on the Maysdorf LBA Tract with characteristics indicating potential significance to farming. There are no unsuitable findings under Criterion 19 for the Maysdorf LBA Tract.</p>
<p>20. State or Indian Tribe Criteria. Federal lands to which is applicable a criterion proposed by the state or Indian tribe located in the planning area and adopted by rulemaking by the Secretary are unsuitable.</p>	<p>There are no criterion proposed by state or Indian tribes that have been approved by the Secretary of the Interior. No tribal lands are located in or near the general review area.</p>	<p>There are no unsuitability findings for this criterion on the Maysdorf LBA Tract.</p>

APPENDIX C

**COAL LEASE-BY-APPLICATION
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APPENDIX D

**BUREAU OF LAND MANAGEMENT
SPECIAL COAL LEASE STIPULATIONS
AND FORM 3400-12 COAL LEASE**

BLM will attach the following special stipulations to the Maysdorf LBA Tract if it is leased:

SPECIAL STIPULATIONS

In addition to observing the general obligations and standards of performance set out in the current regulations, the lessee shall comply with and be bound by the following special stipulations.

These stipulations are also imposed upon the lessee's agents and employees. The failure or refusal of any of these persons to comply with these stipulations shall be deemed a failure of the lessee to comply with the terms of the lease. The lessee shall require his agents, contractors and subcontractors involved in activities concerning this lease to include these stipulations in the contracts between and among them. These stipulations may be revised or amended, in writing, by the mutual consent of the lessor and the lessee at any time to adjust to changed conditions or to correct an oversight.

(a) **CULTURAL RESOURCES**

(1) Before undertaking any activities that may disturb the surface of the leased lands, the lessee shall conduct a cultural resource intensive field inventory in a manner specified by the Authorized Officer of the BLM or of the surface managing agency, if different, on portions of the mine plan area and adjacent areas, or exploration plan area, that may be adversely affected by lease-related

activities and which were not previously inventoried at such a level of intensity. The inventory shall be conducted by a qualified professional cultural resource specialist (i.e., archeologist, historian, historical architect, as appropriate), approved by the Authorized Officer of the surface managing agency (BLM, if the surface is privately owned), and a report of the inventory and recommendations for protecting any cultural resources identified shall be submitted to the Assistant Director of the Western Support Center of the Office of Surface Mining, the Authorized Officer of the BLM, if activities are associated with coal exploration outside an approved mining permit area (hereinafter called Authorized Officer), and the Authorized Officer of the surface managing agency, if different. The lessee shall undertake measures, in accordance with instructions from the Assistant Director, or Authorized Officer, to protect cultural resources on the leased lands. The lessee shall not commence the surface disturbing activities until permission to proceed is given by the Assistant Director or Authorized Officer.

(2) The lessee shall protect all cultural resource properties that have been determined eligible to

the National Register of Historic Places within the lease area from lease-related activities until the cultural resource mitigation measures can be implemented as part of an approved mining and reclamation or exploration plan unless modified by mutual agreement in consultation with the State Historic Preservation Officer.

(3) The cost of conducting the inventory, preparing reports, and carrying out mitigation measures shall be borne by the lessee.

(4) If cultural resources are discovered during operations under this lease, the lessee shall immediately bring them to the attention of the Assistant Director or Authorized Officer, or the Authorized Officer of the surface managing agency, if the Assistant Director is not available. The lessee shall not disturb such resources except as may be subsequently authorized by the Assistant Director or Authorized Officer.

Within two (2) working days of notification, the Assistant Director or Authorized Officer will evaluate or have evaluated any cultural resources discovered and will determine if any action may be required to protect or preserve such discoveries. The cost of data recovery for cultural resources discovered during lease operations shall be borne by the lessee unless otherwise specified by the Authorized Officer of the BLM or of

the surface managing agency, if different.

(5) All cultural resources shall remain under the jurisdiction of the United States until ownership is determined under applicable law.

(b) ***PALEONTOLOGICAL
RESOURCES***

If paleontological resources, either large and conspicuous, and/or of significant scientific value are discovered during mining operations, the find will be reported to the Authorized Officer immediately. Mining operations will be suspended within 250 feet of said find. An evaluation of the paleontological discovery will be made by a BLM-approved professional paleontologist within five (5) working days, weather permitting, to determine the appropriate action(s) to prevent the potential loss of any significant paleontological value. Operations within 250 feet of such discovery will not be resumed until written authorization to proceed is issued by the Authorized Officer. The lessee will bear the cost of any required paleontological appraisals, surface collection of fossils, or salvage of any large conspicuous fossils of significant scientific interest discovered during the operations.

(c) **THREATENED, ENDANGERED, CANDIDATE, or OTHER SPECIAL STATUS PLANT and ANIMAL SPECIES**

The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened or endangered under the Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 *et seq.*, or that have other special status. The Authorized Officer may recommend modifications to exploration and development proposals to further conservation and management objectives or to avoid activity that will contribute to a need to list such species or their habitat or to comply with any biological opinion issued by the Fish and Wildlife Service for the Proposed Action. The Authorized Officer will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act. The Authorized Officer may require modifications to, or disapprove a proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species, or result in the destruction or adverse modification of designated or proposed critical habitat.

The lessee shall comply with instructions from the Authorized Officer of the surface managing agency (BLM, if the surface is private) for ground disturbing activities associated with coal exploration on federal coal leases prior to approval of a mining and reclamation permit or

outside an approved mining and reclamation permit area. The lessee shall comply with instructions from the Authorized Officer of the Office of Surface Mining Reclamation and Enforcement, or his designated representative, for all ground disturbing activities taking place within an approved mining and reclamation permit area or associated with such a permit.

(d) **MULTIPLE MINERAL DEVELOPMENT**

Operations will not be approved which, in the opinion of the Authorized Officer, would unreasonably interfere with the orderly development and/or production from a valid existing mineral lease issued prior to this one for the same lands.

(e) **OIL AND GAS/COAL RESOURCES**

The BLM realizes that coal mining operations conducted on Federal coal leases issued within producing oil and gas fields may interfere with the economic recovery of oil and gas; just as Federal oil and gas leases issued in a Federal coal lease area may inhibit coal recovery. BLM retains the authority to alter and/or modify the resource recovery and protection plans for coal operations and/or oil and gas operations on those lands covered by Federal mineral leases so as to obtain maximum resource recovery.

(f) **RESOURCE RECOVERY AND PROTECTION**

Notwithstanding the approval of a resource recovery and protection plan (R2P2) by the BLM, lessor reserves the right to seek damages against the operator/lessee in the event (i) the operator/lessee fails to achieve maximum economic recovery (MER) (as defined at 43 CFR 3480.0-5(21)) of the recoverable coal reserves or (ii) the operator/lessee is determined to have caused a wasting of recoverable coal reserves. Damages shall be measured on the basis of the royalty that would have been payable on the wasted or unrecovered coal.

The parties recognize that under an approved R2P2, conditions may require a modification by the operator/lessee of that plan. In the event a coal bed or portion thereof is not to be mined or is rendered unmineable by the operation, the operator/lessee shall submit appropriate justification to obtain approval by the Authorized Officer to leave such reserves unmined. Upon approval by the Authorized Officer, such coal beds or portions thereof shall not be subject to damages as described above. Further, nothing in this section shall prevent the operator/lessee from exercising its right to relinquish all or portion of the lease as authorized by statute and regulation.

In the event the Authorized Officer determines that the R2P2, as approved, will not attain MER as the result of changed conditions, the

Authorized Officer will give proper notice to the operator/lessee as required under applicable regulations. The Authorized Officer will order a modification if necessary, identifying additional reserves to be mined in order to attain MER. Upon a final administrative or judicial ruling upholding such an ordered modification, any reserves left unmined (wasted) under that plan will be subject to damages as described in the first paragraph under this section.

Subject to the right to appeal hereinafter set forth, payment of the value of the royalty on such unmined recoverable coal reserves shall become due and payable upon determination by the Authorized Officer that the coal reserves have been rendered unmineable or at such time that the operator/lessee has demonstrated an unwillingness to extract the coal.

The BLM may enforce this provision either by issuing a written decision requiring payment of the Mineral Management Service demand for such royalties, or by issuing a notice of non-compliance. A decision or notice of non-compliance issued by the lessor that payment is due under this stipulation is appealable as allowed by law.

(g) **PUBLIC LAND SURVEY PROTECTION**

The lessee will protect all survey monuments, witness corners, reference monuments, and bearing

trees against destruction, obliteration, or damage during operations on the lease areas. If any monuments, corners or accessories are destroyed, obliterated, or damaged by this operation, the lessee will hire an appropriate county surveyor or registered land surveyor to reestablish or restore the monuments, corners, or accessories at the same location, using surveying procedures in accordance with the "Manual of Surveying Instructions for the Survey of the Public Lands of the United States." The survey will be recorded in the appropriate county records, with a copy sent to the Authorized Officer.

(h) ***RAILROAD RIGHT-OF-WAY***

No mining activity of any kind may be conducted within the Burlington Northern/Santa Fe and Union Pacific railroad right-of-way. The lessee shall recover all legally and economically recoverable coal from all leased lands not within the foregoing right-of-way. Lessee shall pay all royalties on any legally and economically recoverable coal which it fails to mine without the written permission of the Authorized Officer.

APPENDIX E

**NON-MINE GROUNDWATER AND
SURFACE WATER RIGHTS WITHIN AND
ADJACENT TO THE MAYSDORF
LBA TRACT**

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
P22623P	3/1/1973	46	70	5	SWNW	FLORA M. RAITT	RAITT #3	PUW	STO	5	220
* P81649W	1/16/1990	46	70	5	SWNW	UNION OIL COMPANY OF CALIFORNIA	AM KIRK FEDERAL D 3 TANK BATTERY	UNA	IND	1.2	10275
P81647W	1/16/1990	46	70	6	NESE	UNION OIL COMPANY OF CALIFORNIA	BIG HAND FEDERAL 32 1 TANK BATTERY	UNA	IND	7.5	10300
* P81649W	1/16/1990	46	70	6	NESE	UNION OIL COMPANY OF CALIFORNIA	AM KIRK FEDERAL D 3 TANK BATTERY	UNA	IND	1.2	10275
* P81650W	1/16/1990	46	70	6	SESE	UNION OIL COMPANY OF CALIFORNIA	AM KIRK UNIT TANK BATTERY AND INJECTION STATION	UNA	IND	0.2	-6
* P81650W	1/16/1990	46	70	6	NESE	UNION OIL COMPANY OF CALIFORNIA	AM KIRK UNIT TANK BATTERY AND INJECTION STATION	UNA	IND	0.2	-6
* P84505W	2/14/1991	46	70	6		UNION OIL COMPANY OF CALIFORNIA	DAWN FEDERAL #1-41	UNA	IND	8	10550
* P93068W	10/11/1993	46	70	6	NESE	QUICKSILVER RESOURCES	BIG HAND 1-N19	GST	IND	60	8707
* P93068W	10/11/1993	46	70	6	NWSE	QUICKSILVER RESOURCES	BIG HAND 1-N19	GST	IND	60	8707
* P94245W	1/1/1993	46	70	6	NESE	WYO BOARD OF LAND COMMISSIONERS** UNION OIL COMPANY OF CALIFORNIA	36-15 (STATE)	UNA	IND	15	
* P94245W	1/1/1993	46	70	6	NWSE	WYO BOARD OF LAND COMMISSIONERS** UNION OIL COMPANY OF CALIFORNIA	36-15 (STATE)	UNA	IND	15	
* CU6/096A	11/2/1977	46	70	7	SESW	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	70	7	NESE	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	70	7	SWSE	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	70	7	SESE	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* P42470W	11/2/1977	46	70	7	SESW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	7	NESE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	7	SWSE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	7	SESE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P46399W	1/18/1979	46	70	7	SESW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	7	NESE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	7	SWSE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	7	SESE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46400W	1/18/1979	46	70	7	SESW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	7	NESE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	7	SWSE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	7	SESE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* CU6/096A	11/2/1977	46	70	8	NESW	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	70	8	NWSW	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	70	8	SWSW	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	70	8	SESW	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	70	8	NESE	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	70	8	NWSE	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	70	8	SWSE	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	70	8	SESE	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		

Appendix E

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
* P42470W	11/2/1977	46	70	8	NESW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	8	NWSW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	8	SWSW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	8	SESW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	8	NESE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	8	NWSE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	8	SWSE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	8	SESE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P46399W	1/18/1979	46	70	8	NESW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	8	NWSW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	8	SWSW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	8	SESW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	8	NESE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	8	NWSE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	8	SWSE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	8	SESE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46400W	1/18/1979	46	70	8	NESW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	8	NWSW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	8	SWSW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	8	SESW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	8	NESE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	8	NWSE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	8	SWSE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	8	SESE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
P19832P	12/31/1946	46	70	17	SENE	R.S. THRUSH	PARDNER #1	UNA	STO	3	118
* P42470W	11/2/1977	46	70	17	NENE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	17	NWNE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	17	SWNE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	17	SENE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	17	NENW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	17	NWNW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
* P42470W	11/2/1977	46	70	17	SWNW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	17	SESW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	17	NESW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	17	NWSW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	17	SWSW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	17	SESW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	17	NESE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	17	NWSE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	17	SWSE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	17	SESE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P46399W	1/18/1979	46	70	17	SWNE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46400W	1/18/1979	46	70	17	NENE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	17	NWNE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	17	SWNE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	17	SENE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	17	NENW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	17	NWNW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	17	SWNW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	17	SESW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	17	NESW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	17	NWSW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	17	SWSW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	17	SESW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	17	NESE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	17	NWSE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	17	SWSE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	17	SESE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
P52438W	6/13/1980	46	70	17	NWNE	DAVIS OIL COMPANY	ENL USA-W0310356 #1-0-14	PU	MIS	100	850
P27409W	7/15/1974	46	70	18	NENE	ATLANTIC RICHFIELD COMPANY	CC-W-10	PUW	MIS	0	
P27410W	7/15/1974	46	70	18	NWSE	ATLANTIC RICHFIELD COMPANY	CC-W-9	PUW	MIS	0	
P27411W	7/15/1974	46	70	18	SESE	ATLANTIC RICHFIELD COMPANY	CC-W-8	PUW	MIS	0	
P29917W	5/5/1975	46	70	18	NWSE	ATLANTIC RICHFIELD COMPANY	CCFU #1	PUW	MIS	0	380
* P42470W	11/2/1977	46	70	18	NENE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887

Appendix E

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
* P42470W	11/2/1977	46	70	18	NWNE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	18	SWNE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	18	SENE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	18	NENW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	18	NWNW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	18	SWNW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	18	SENW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	18	NESW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	18	NWSW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	18	SWSW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	18	SESW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	18	NESE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	18	NWSE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	18	SWSE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	18	SESE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P46399W	1/18/1979	46	70	18	NENE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	18	NWNE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	18	SWNE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	18	SENE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	18	NENW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	18	NWNW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	18	SWNW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	18	SENW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	18	NESW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	18	NWSW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	18	SWSW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	18	SESW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	18	NESE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	18	NWSE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	18	SWSE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	18	SESE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
* P46400W	1/18/1979	46	70	18	NENE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	18	NWNE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	18	SWNE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	18	SENE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	18	NENW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	18	NWNW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	18	SWNW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	18	SENW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	18	NESW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	18	NWSW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	18	SWSW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	18	SESW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	18	NESE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	18	NWSE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	18	SWSE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	18	SESE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
P27413W	7/15/1974	46	70	19	SWNE	ATLANTIC RICHFIELD COMPANY	CC-W-6	PUW	MIS	0	
* P42470W	11/2/1977	46	70	19	NENE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	19	NWNE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	19	SWNE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	19	SENE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	19	NENW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	19	NWNW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	19	SENW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	19	NESW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	19	SESW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	19	NESE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	19	NWSE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	19	SWSE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	19	SESE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P46399W	1/18/1979	46	70	19	NENE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	19	NWNE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654

Appendix E

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
* P46399W	1/18/1979	46	70	19	SWNE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	19	SENE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	19	NENW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	19	NWNW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	19	SENW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	19	NESW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	19	SESW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	19	NESE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	19	NWSE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	19	SWSE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	19	SESE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46400W	1/18/1979	46	70	19	SWNE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PUW	MIS	60	
* P46400W	1/18/1979	46	70	19	NENE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	19	NWNE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	19	SWNE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	19	SENE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	19	NENW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	19	NWNW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	19	SENW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	19	NESW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	19	SESW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	19	NESE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	19	NWSE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	19	SWSE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	19	SESE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
P19834P	4/30/1969	46	70	20	SWSW	R. S. THRUSH	CRICK #1	UNA	STO	10	800
P27412W	7/15/1974	46	70	20	NESW	ATLANTIC RICHFIELD COMPANY	CC-W-7	PUW	MIS	0	
* P42470W	11/2/1977	46	70	20	NWNE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	20	SWNE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	20	NENW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	20	NWNW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	20	SWNW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	20	SENW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	20	NESW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	20	NWSW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
* P42470W	11/2/1977	46	70	20	SWSW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P46399W	1/18/1979	46	70	20	NWNE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	20	SWNE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	20	NENW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	20	NWNW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	20	SWNW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	20	SENE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	20	NESW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	20	NWSW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	20	SWSW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46400W	1/18/1979	46	70	20	NWNE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	20	SWNE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	20	NENW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	20	NWNW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	20	SWNW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	20	SENE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	20	NESW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	20	NWSW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	20	SWSW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* CU6/096A	11/2/1977	46	70	30	NENE	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	70	30	NWNE	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	70	30	NENW	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* P42470W	11/2/1977	46	70	30	NENE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	30	NWNE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	70	30	NWNW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P46399W	1/18/1979	46	70	30	NENE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	30	NWNE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	70	30	NWNW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46400W	1/18/1979	46	70	30	NENE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	30	NWNE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	70	30	NWNW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P101340W	1/29/1996	46	71	1	NENE	WYO BOARD OF LAND COMMISSIONERS**CRAMER OIL COMPANY	STATE 36-10	UNA	IND	26	4400
* P101340W	1/29/1996	46	71	1	NWNE	WYO BOARD OF LAND COMMISSIONERS**CRAMER OIL COMPANY	STATE 36-10	UNA	IND	26	4400
* P84505W	2/14/1991	46	71	1	NENE	UNION OIL COMPANY OF CALIFORNIA	DAWN FEDERAL #1-41	UNA	IND	8	10550
P15843P	12/31/1922	46	71	2	SESE	ANGELA A. BOOS TRUST	#1 MOORE	PUW	STO	2	60
P101310W	1/11/1996	46	71	4	NENW	LANCE OIL & GAS COMPANY, INC	KIRKPATRICK #4-21	UNA	STO,CBM	0	295
* P101311W	1/11/1996	46	71	4	NWNW	LANCE OIL & GAS COMPANY, INC	KIRKPATRICK #4-11	UNA	STO,CBM	0	304

Appendix E

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
* P101311W	1/11/1996	46	71	4	NENW	LANCE OIL & GAS COMPANY, INC	KIRKPATRICK #4-11	UNA	STO,CBM	0	304
* P106896W	7/24/1997	46	71	4	SWSW	LANCE OIL & GAS COMPANY, INC	ATKINS #4-14	GST	CBM	8.67	347
* P106896W	7/24/1997	46	71	4	SESW	LANCE OIL & GAS COMPANY, INC	ATKINS #4-14	GST	CBM	8.67	347
P106897W	7/24/1997	46	71	4	SESW	LANCE OIL & GAS COMPANY, INC	ATKINS #4-24	GST	CBM	7	321.5
P18724P	12/31/1945	46	71	4	NESW	LENA M. HAIGHT	RIVER #1	PUW	STO	7.5	85
P59069W	12/10/1981	46	71	4	NENE	MILO HAIGHT	MILO HAIGHT #2	PUW	STO	25	900
* P98962W	4/17/1995	46	71	4	SESW	MARTENS & PECK OPERATING CO.	ATKINS #4-24	UNA	MIS,STO,CBM	25	
* P98962W	4/17/1995	46	71	4	SWSW	MARTENS & PECK OPERATING CO.	ATKINS #4-24	UNA	MIS,STO,CBM	25	
P98963W	4/17/1995	46	71	4	NWNE	LANCE OIL & GAS COMPANY, INC	PITTMAN #4-31	GST	MIS,CBM	0	261
P102026W	4/10/1996	46	71	5	SWNW	LANCE OIL & GAS COMPANY, INC	GARRETT #5-12	UNA	MIS,CBM	0	343
P106894W	7/24/1997	46	71	5	SWSE	LANCE OIL & GAS COMPANY, INC	THRUSH #5-34	GST	CBM	7.34	318
* P106895W	7/24/1997	46	71	5	SESE	LANCE OIL & GAS COMPANY, INC	THRUSH #5-44	GST	CBM	7.34	340
* P106895W	7/24/1997	46	71	5	SWSE	LANCE OIL & GAS COMPANY, INC	THRUSH #5-44	GST	CBM	7.34	340
P106908W	7/25/1997	46	71	5	NWSW	LANCE OIL & GAS COMPANY, INC	GARRETT #5-13	GST	CBM	14	357
P18723P	12/31/1932	46	71	5	NWSE	DAVID THRUSH	THRUSH #1	PUW	STO	7.5	35
P98654W	3/27/1995	46	71	5	NENE	LANCE OIL & GAS COMPANY, INC	THRUSH #5-41	GST	MIS,CBM	0	291
P98655W	3/27/1995	46	71	5	SENE	LANCE OIL & GAS COMPANY, INC	THRUSH #5-42	GST	MIS,CBM	25	309
* P99906W	7/24/1995	46	71	5	NWNW	LANCE OIL & GAS COMPANY, INC	GARRETT #5-11	GST	MIS,CBM	0	342
* P99906W	7/24/1995	46	71	5	NWSE	LANCE OIL & GAS COMPANY, INC	GARRETT #5-11	GST	MIS,CBM	0	342
P106322W	6/6/1997	46	71	6	NENW	LANCE OIL & GAS COMPANY, INC	PICKREL #6-21	GST	CBM	12.91	401
P106323W	6/6/1997	46	71	6	NWNE	LANCE OIL & GAS COMPANY, INC	PICKREL #6-31	GST	CBM	0	378
P106324W	6/6/1997	46	71	6	SWNE	LANCE OIL & GAS COMPANY, INC	PICKREL #6-32	GST	CBM	0	370
P106325W	6/6/1997	46	71	6	NENE	LANCE OIL & GAS COMPANY, INC	PICKREL #6-41	GST	CBM	0	371
P106326W	6/6/1997	46	71	6	SENE	LANCE OIL & GAS COMPANY, INC	PICKREL #6-42	GST	CBM	22	377
P106327W	6/6/1997	46	71	6	NESE	LANCE OIL & GAS COMPANY, INC	PICKREL #6-43	GST	CBM	11	383
* P106909W	7/25/1997	46	71	6	SWSW	LANCE OIL & GAS COMPANY, INC	PICKREL #6-14	GST	CBM	23.8	384
* P106910W	7/25/1997	46	71	6	NWSE	LANCE OIL & GAS COMPANY, INC	PICKREL #6-33	GST	CBM	8	375
* P106910W	7/25/1997	46	71	6	NESE	LANCE OIL & GAS COMPANY, INC	PICKREL #6-33	GST	CBM	8	375
* P108758W	1/30/1998	46	71	6	NESW	LANCE OIL & GAS COMPANY, INC	PICKRELL 23-6	GST	STO,CBM	7	365
* P108758W	1/30/1998	46	71	6	SWNE	LANCE OIL & GAS COMPANY, INC	PICKRELL 23-6	GST	STO,CBM	7	365
P70173W	5/20/1985	46	71	6	NENE	PICKREL LAND & CATTLE CO., INC	HAIGHT #1 WSW	UNA	IND	15	1075
* P106898W	7/24/1997	46	71	7	NWNW	LANCE OIL & GAS COMPANY, INC	CLOSE #7-11	GST	CBM	25	3754
P106899W	7/24/1997	46	71	7	SWNW	LANCE OIL & GAS COMPANY, INC	CLOSE #7-12	GST	CBM	18.67	370
P110088W	5/12/1998	46	71	7	SESW	LANCE OIL & GAS COMPANY, INC	PICKREL 24-7	GST	STO,CBM	15.5	355
P113967W	2/1/1999	46	71	7	NESW	LANCE OIL & GAS COMPANY, INC	PICKREL 23-7-4671	GST	STO,CBM	12.4	343
P113968W	2/1/1999	46	71	7	SWNE	LANCE OIL & GAS COMPANY, INC	PICKREL 32-7-4671	GST	STO,CBM	11.5	386
P29025P	2/4/1975	46	71	7	SESW	PICKREL LAND & CATTLE CO., INC	TANNER #5	PUW	STO	-1	75
* P106900W	7/24/1997	46	71	8	SWNE	LANCE OIL & GAS COMPANY, INC	PETERS #8-32	GST	CBM	4.66	351
* P106900W	7/24/1997	46	71	8	SENE	LANCE OIL & GAS COMPANY, INC	PETERS #8-32	GST	CBM	4.66	351
P106901W	7/24/1997	46	71	8	SENE	LANCE OIL & GAS COMPANY, INC	PETERS #8-42	GST	CBM	4.33	317

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
* P98967W	4/17/1995	46	71	8	SENE	MARTENS & PECK OPERATING CO.	PETERS #8-42	UNA	MIS,STO,CBM	25	
* P98967W	4/17/1995	46	71	8	NENE	MARTENS & PECK OPERATING CO.	PETERS #8-42	UNA	MIS,STO,CBM	25	
P15841P	6/17/1961	46	71	11	NWNE	ANGELA A. BOOS TRUST	#7 BOOS	PUW	DOM	4	300
P89857W	10/15/1992	46	71	11	NESW	DCD, INC.	BOOS #11-11	GST	MIS,DEW,CBM	0	245
* CU6/096A	11/2/1977	46	71	13	SWNW	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	71	13	SENE	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	71	13	NESW	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	71	13	NWSW	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	71	13	SWSW	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	71	13	SESW	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	71	13	NESE	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	71	13	NWSE	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	71	13	SWSE	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	71	13	SESE	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
P131658W	12/28/2000	46	71	13	SENE	JAMES J. JONAS, Jr.	JONAS JR # 1	GST	DOM,STO	0	300
P158828W	5/11/2004	46	71	13	NWNW	TONY S HAYDEN	HAYDEN #1	GSI	STO		
P22624P	3/1/1973	46	71	13	SESW	FLORA M. RAITT	RAITT #4	PUW	STO	5	500
* P42470W	11/2/1977	46	71	13	SWNW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	71	13	SENE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	71	13	NESW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	71	13	NWSW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	71	13	SWSW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	71	13	SESW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	71	13	NESE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	71	13	NWSE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	71	13	SWSE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	71	13	SESE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P46399W	1/18/1979	46	71	13	SWNW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	71	13	SENE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	71	13	NESW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	71	13	NWSW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	71	13	SWSW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	71	13	SESW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	71	13	NESE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654

Appendix E

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
* P46399W	1/18/1979	46	71	13	NWSE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	71	13	SWSE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	71	13	SESE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46400W	1/18/1979	46	71	13	SWNW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	71	13	SESW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	71	13	NESW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	71	13	NWSW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	71	13	SWSW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	71	13	SESW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	71	13	NESE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	71	13	NWSE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	71	13	SWSE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	71	13	SESE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
P114174W	2/22/1999	46	71	14	SESW	BILL BARRETT CORPORATION	CC-CBM 24-14	GST	CBM	5.1	292
P114175W	2/22/1999	46	71	14	SESW	BILL BARRETT CORPORATION	CC-CBM 14-14	GST	CBM	0.6	287
P114896W	3/26/1999	46	71	14	NWSW	BILL BARRETT CORPORATION	CC-CBM 13-14	GST	CBM	2.6	306
P114897W	3/26/1999	46	71	14	NESW	BILL BARRETT CORPORATION	CC-CBM 23-14	GST	CBM	3.9	337
P128282W	8/14/2000	46	71	14	SWNE	BILL BARRETT CORPORATION	CC-CBM 32-14	GST	CBM	10	257
P128283W	8/14/2000	46	71	14	NWSE	BILL BARRETT CORPORATION	CC-CBM 33-14	GST	CBM	10	281
P128284W	8/14/2000	46	71	14	SWSE	BILL BARRETT CORPORATION	CC-CBM 34-14	GST	CBM	10	306
P128285W	8/14/2000	46	71	14	NESE	BILL BARRETT CORPORATION	CC-CBM 43-14	GST	CBM	10	253
P128286W	8/14/2000	46	71	14	SESE	BILL BARRETT CORPORATION	CC-CBM 44-14	GST	CBM	10	263
* P56976W	6/3/1981	46	71	14	SWSE	DAVIS OIL COMPANY	DAVIS HOADLEY #1	PU	MIS	85	965
P71303W	9/27/1985	46	71	14	SWSW	HOADLEY ESTATE	HOADLEY #1	PUW	DOM,STO	5	120
P107169W	8/18/1997	46	71	15	NESW	RIM OPERATING, INC	CBM A #23-15	GST	MIS,CBM	1	265
P108715W	1/9/1998	46	71	15	SESW	RIM OPERATING, INC	CBM A #24-15	UNA	STO,CBM	2	288
P113998W	2/8/1999	46	71	15	NENW	RIM OPERATING, INC	CBM A #21-15	GST	STO,CBM	0	256
P113999W	2/8/1999	46	71	15	SENE	RIM OPERATING, INC	CBM A #42-15	GST	STO,CBM	0	305
P114000W	2/8/1999	46	71	15	SESE	RIM OPERATING, INC	CBM A #44-15	GST	STO,CBM	25	340
P15839P	10/24/1960	46	71	15	NESE	ANGELA A. BOOS TRUST	#5 BOOS	UNA	STO	7	258
P106932W	7/28/1997	46	71	16	NESE	WYO BOARD OF LAND COMMISSIONERS** RIM OPERATING, INC	CBM A #43-16	GST	MIS,DEW,CBM	5	255
P107172W	8/18/1997	46	71	16	NENE	WYO BOARD OF LAND COMMISSIONERS** RIM OPERATING, INC	CBM A #41-16	UNA	CBM	1	230
P108716W	1/9/1998	46	71	16	NWSW	WYO BOARD OF LAND COMMISSIONERS** RIM OPERATING, INC	CBM A #13-16	UNA	STO,CBM	10	293
P108719W	1/9/1998	46	71	16	SENE	WYO BOARD OF LAND COMMISSIONERS** RIM OPERATING, INC	CBM A #42-16	UNA	STO,MIS,CBM	5	225
P109057W	2/17/1998	46	71	16	SWNW	WYO BOARD OF LAND COMMISSIONERS** RIM OPERATING, INC	CBM A #12-16	UNA	STO,MIS,CBM	2.6	281
P109059W	2/17/1998	46	71	16	SESW	WYO BOARD OF LAND COMMISSIONERS** RIM OPERATING, INC	CBM A #22-16R	UNA	STO,MIS,CBM	5	240
P153527W	8/1/2003	46	71	16	NESE	RIM OPERATING, INC.** WY STATE BOARD OF LAND COMMISSIONERS	CBM A #43-16 ANDERSON	GSI	STO,CBM		
P107173W	8/18/1997	46	71	17	SWSE	RIM OPERATING, INC	CBM A #34-17	UNA	CBM	5	286
P107174W	8/18/1997	46	71	17	NESE	RIM OPERATING, INC	CBM A #43-17	UNA	CBM	5	267

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
P108721W	1/9/1998	46	71	17	NWSE	RIM OPERATING, INC	CBM A #33-17R	UNA	STO,MIS,CBM	5	275
P108722W	1/9/1998	46	71	17	SESE	RIM OPERATING, INC	CBM A #44-17	UNA	STO,MIS,CBM	5	269
P153528W	8/1/2003	46	71	17	SESE	RIM OPERATING, INC.	CBM A #44-17 ANDERSON	GSI	STO,CBM		
P101685W	2/26/1996	46	71	18	SESW	JAMES D ELLIOTT	ELLIOTT #1	UNA	DOM	10	220
P109617W	4/10/1998	46	71	18	NENW	LANCE OIL & GAS COMPANY, INC	PICKREL 18-21	GST	CBM	0	355
P109784W	4/22/1998	46	71	18	SESW	LANCE OIL & GAS COMPANY, INC	PICKREL 18-22	GST	STO,CBM	19	379
P109785W	4/22/1998	46	71	18	SWNE	LANCE OIL & GAS COMPANY, INC	PICKREL 18-32	GST	STO,CBM	16	362
P109906W	5/4/1998	46	71	18	SWSE	DONALD GIBSON	GIBSON #1	UNA	DOM	18	223
* P109930W	5/6/1998	46	71	18	NESW	MIKE/KATHLEEN GETTERT	GETTERT #2	UNA	DOM	10	210
* P109930W	5/6/1998	46	71	18	SESW	MIKE/KATHLEEN GETTERT	GETTERT #2	UNA	DOM	10	210
P110091W	5/12/1998	46	71	18	SESE	LANCE OIL & GAS COMPANY, INC	LITTLE BUFFALO 44-18	GST	STO,CBM	9	348
P110189W	5/26/1998	46	71	18	SESW	JAMES D ELLIOTT	ELLIOTT #2	UNA	DOM	10	280
P110714W	6/25/1998	46	71	18	SESW	LARRY W. LEMONS	MORNING GLORY #1		DOM	18	200
P111231W	7/28/1998	46	71	18	SWSW	BRIAN PRICKETT	PRICKETT #1		DOM,STO	16	280
P113974W	2/1/1999	46	71	18	SWNW	LANCE OIL & GAS COMPANY, INC	PICKREL 12-18-4671	GST	STO,CBM	8	454
P144329W	5/6/2002	46	71	18	NWSW	JOHN KEVIN GRIFFITH	LISA'S # 1	GST	DOM		262
* P148231W	12/5/2002	46	71	18	NESW	MIKE/KATIE GETTERT	GETTERT # 3	GSI	DOM,STO		
* P148231W	12/5/2002	46	71	18	SESW	MIKE/KATIE GETTERT	GETTERT # 3	GSI	DOM,STO		
P101933W	4/9/1996	46	71	19	NWNW	BRUCE CARSON	CARSON #1	UNA	DOM	18	182
P110092W	5/12/1998	46	71	19	NENE	LANCE OIL & GAS COMPANY, INC	LITTLE BUFFALO 41-19	GST	STO,CBM	8	328
P110117W	5/18/1998	46	71	19	NWNE	LANCE OIL & GAS COMPANY, INC	LITTLE BUFFALO 31-19	GST	STO,CBM	8	341
P110118W	5/18/1998	46	71	19	SENE	LANCE OIL & GAS COMPANY, INC	LITTLE BUFFALO 42-19	GST	STO,CBM	7	343
P122397W	1/24/2000	46	71	19	SWSW	DUNCAN OIL, INC.	EAGLE 14-19	GST	CBM	15	464
P122398W	1/24/2000	46	71	19	NESW	DUNCAN OIL, INC.	EAGLE 23-19	GST	CBM	15	373
P122399W	1/24/2000	46	71	19	SESW	DUNCAN OIL, INC.	EAGLE 24-19	GST	CBM	15	388
P122400W	1/24/2000	46	71	19	NWSE	DUNCAN OIL, INC.	EAGLE 33-19	GST	CBM	15	370
P122401W	1/24/2000	46	71	19	SWSE	DUNCAN OIL, INC.	EAGLE 34-19	UNA	CBM	15	380
P122402W	1/24/2000	46	71	19	NESE	DUNCAN OIL, INC.	EAGLE 43-19	GST	CBM	15	368
P122403W	1/24/2000	46	71	19	SESE	DUNCAN OIL, INC.	EAGLE 44-19	GST	CBM	15	384
* P126084W	6/9/2000	46	71	19	SWSE	DUNCAN OIL, INC.	EAGLE BLOWER FACILITY	GST	IND	30	-1
P21662P	12/31/1925	46	71	19	NWSW	SYLVIA NEWTON	NEWTON #4	PUW	DOM,STO	22.5	200
* CU1/311A	5/24/1971	46	71	20	SWNE	INEXCO OIL COMPANY	GRADY UNIT WATER WELL #1	PU	IND		
P107175W	8/18/1997	46	71	20	SWNE	RIM OPERATING, INC	CBM A #32-20	UNA	CBM	25	
P109060W	2/17/1998	46	71	20	NWNE	WYO BOARD OF LAND COMMISSIONERS** RIM OPERATING, INC	CBM A #31-20	UNA	STO,CBM	8.8	310
P111739W	9/10/1998	46	71	20	NWNW	RIM OPERATING, INC	CBM A #11-20		STO,MIS,CBM	5	300
P111740W	9/10/1998	46	71	20	SWNW	RIM OPERATING, INC	CBM A #12-20		STO,MIS,CBM	5	306
P111741W	9/10/1998	46	71	20	NWSW	RIM OPERATING, INC	CBM A #13-20		STO,MIS,CBM	5	326
P111742W	9/10/1998	46	71	20	NENW	RIM OPERATING, INC	CBM A #21-20R		STO,MIS,CBM	5	310
P111743W	9/10/1998	46	71	20	SESW	RIM OPERATING, INC	CBM A #22-20		STO,MIS,CBM	5	306
P133434W	3/23/2001	46	71	20	SESW	RIM OPERATING, INC	CBM A #24-20	GST	STO,CBM	0	345

Appendix E

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
* P9258W	5/24/1971	46	71	20	SWNE	INEXCO OIL CO.	GRADY UNIT WATER WELL #1	ADJ	IND	350	4830
P156575W	1/14/2004	46	71	21	SWSW	RIM OPERATING, INC.	CBM A #14-21	GSI	STO,CBM		
P71306W	9/27/1985	46	71	21	SESW	HOADLEY ESTATE	HOADLEY #4	PUW	STO	6	55
* P9259W	5/24/1971	46	71	21	SWNE	INEXCO OIL CO.	GRADY UNIT WATER WELL #2	PU	IND	357	4830
P140136W	10/16/2001	46	71	22	SWSE	RIM OPERATING, INC.	CBM A #34-22	GST	STO,CBM		365
P155763W	11/24/2003	46	71	22	SWNW	RIM OPERATING, INC.	CBM A #12-22	GSI	STO,CBM		
P155764W	11/24/2003	46	71	22	SWSW	RIM OPERATING, INC.	CBM A #14-22	GSI	STO,CBM		
P155765W	11/24/2003	46	71	22	SWNE	RIM OPERATING, INC.	CBM A #32-22	GSI	STO,CBM		
* P160998W	7/12/2004	46	71	22	SWSE	RIM OPERATING, INC.	CBM A #24-23	GSI	STO,CBM		
P71304W	9/27/1985	46	71	22	SWNE	HOADLEY ESTATE	HOADLEY #2	PUW	STO	5	110
P114173W	2/22/1999	46	71	23	NWNW	BILL BARRETT CORPORATION	CC-CBM 11-23	GST	CBM	4.5	351
P114176W	2/22/1999	46	71	23	NENW	BILL BARRETT CORPORATION	CC-CBM 21-23	GST	CBM	2.9	321
P114177W	2/22/1999	46	71	23	NWNE	BILL BARRETT CORPORATION	CC-CBM 31-23	GST	CBM	1.9	311
P114178W	2/22/1999	46	71	23	NENE	BILL BARRETT CORPORATION	CC-CBM 41-23	UNA	CBM	0.9	263
P114179W	2/22/1999	46	71	23	SWNE	BILL BARRETT CORPORATION	CC-CBM 32-23	GST	CBM	7.2	309
P114180W	2/22/1999	46	71	23	SENE	BILL BARRETT CORPORATION	CC-CBM 42-23	GST	CBM	1.6	263
P128281W	8/14/2000	46	71	23	SENE	BILL BARRETT CORPORATION	CC-CBM 22-23	GST	CBM	10	326
P128287W	8/14/2000	46	71	23	SWNW	BILL BARRETT CORPORATION	CC-CBM 12-23	GST	CBM	10	410
* P160998W	7/12/2004	46	71	23	SESW	RIM OPERATING, INC.	CBM A #24-23	GSI	STO,CBM		
* P160998W	7/12/2004	46	71	23	SESW	RIM OPERATING, INC.	CBM A #24-23	GSI	STO,CBM		
* P56976W	6/3/1981	46	71	23	NENW	DAVIS OIL COMPANY	DAVIS HOADLEY #1	PUW	MIS	85	965
* P56976W	6/3/1981	46	71	23	SWNE	DAVIS OIL COMPANY	DAVIS HOADLEY #1	PU	MIS	85	965
* P56976W	6/3/1981	46	71	23	SWNW	DAVIS OIL COMPANY	DAVIS HOADLEY #1	PU	MIS	85	965
P71305W	9/27/1985	46	71	23	NWSW	HOADLEY ESTATE	HOADLEY #3	PUW	STO	5	180
P71307W	9/27/1985	46	71	23	NENW	HOADLEY ESTATE	HOADLEY #5	PUW	STO	20	965
* CU6/096A	11/2/1977	46	71	24	NENE	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	71	24	NWNE	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	71	24	NENW	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
* CU6/096A	11/2/1977	46	71	24	NWNW	ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	PU	MIS,STO		
P129276W	9/25/2000	46	71	24	SENE	SHERRY & DONALD BEHNKE	HOUSE NO. 1	UNA	DOM,STO	10	280
P152672W	7/22/2003	46	71	24	SENE	SHERRY BEHNKE	HOUSE #2	GSI	DOM,STO		
P19833P	12/31/1913	46	71	24	SENE	R. S. THRUSH	HOUSE #1	UNA	DOM,STO	10	155
* P42470W	11/2/1977	46	71	24	NENE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	71	24	NWNE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	71	24	NENW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P42470W	11/2/1977	46	71	24	NWNW	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	STATE 16 46 70	ADJ	STO,MIS	170	887
* P46399W	1/18/1979	46	71	24	NENE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	71	24	NWNE	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
* P46399W	1/18/1979	46	71	24	NENW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46399W	1/18/1979	46	71	24	NWNW	ATLANTIC RICHFIELD COMPANY	CC FU 17 1	ADJ	MIS	275	2654
* P46400W	1/18/1979	46	71	24	NENE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	71	24	NWNE	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	71	24	NENW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
* P46400W	1/18/1979	46	71	24	NWNW	ATLANTIC RICHFIELD COMPANY	CCR 17A	PU	MIS	60	
P13439W	3/29/1972	46	71	25	NWNW	JAMES THRUSH	THRUSH #3	PUW	STO	10	465
* CU1/311A	5/24/1971	46	71	26	SWNW	INEXCO OIL COMPANY	GRADY UNIT WATER WELL #1	PU	IND		
P5690P	12/31/1937	46	71	26	SESE	WARREN BROYLES**RICHARD BROYLES	JOE #1	PUW	STO	10	180
* P9258W	5/24/1971	46	71	26	SWNW	INEXCO OIL CO.	GRADY UNIT WATER WELL #1	ADJ	IND	350	4830
P138037W	8/15/2001	46	71	27	SWNW	RIM OPERATING, INC	CBM A # 12-27	GST	STO,CBM		405
P155671W	11/4/2003	46	71	27	NESE	RIM OPERATING, INC.	CBM A #43-27	GST	STO,CBM		530
P155672W	11/4/2003	46	71	27	NENE	RIM OPERATING, INC.	CBM A #41-27	GST	STO,CBM		410
P155766W	11/24/2003	46	71	27	NESW	RIM OPERATING, INC.	CBM A #23-27	GST	STO,CBM		450
P160997W	7/12/2004	46	71	27	SWSE	RIM OPERATING, INC.	CBM A #11-35	GSI	STO,CBM		
* P161697W	8/23/2004	46	71	27	SWNW	RIM OPERATING, INC.	CBM A #21-28	GSI	CBM,STO		
P47827W	4/18/1979	46	71	27	SENE	ASSOCIATION OF INDEPENDENT CONSULTANTS	EP8	PUW	MON	0	
P50441W	9/12/1979	46	71	27	SWSW	ASSOCIATION OF INDEPENDENT CONSULTANTS	EV 20	PUW	MON	0	
P50442W	9/12/1979	46	71	27	NWSW	ASSOCIATION OF INDEPENDENT CONSULTANTS	EV 21	PUW	MON	0	
P84138W	12/17/1990	46	71	27	SWNW	AUSTIN POWDER COMPANY	AUSTIN #1	UNA	MIS	10	400
P93007W	9/30/1993	46	71	27	NWSW	ORIN R EDWARDS	ORIN #1	UNA	DOM,STO	13	830
P153533W	8/1/2003	46	71	28	SWNE	RIM OPERATING, INC.	CBM A #32-28	GST	STO,CBM		410
P153534W	8/1/2003	46	71	28	SWSE	RIM OPERATING, INC.	CBM A #34-28	GSI	STO,CBM		
* P161697W	8/23/2004	46	71	28	NENW	RIM OPERATING, INC.	CBM A #21-28	GSI	CBM,STO		
* P161697W	8/23/2004	46	71	28	NENW	RIM OPERATING, INC.	CBM A #21-28	GSI	CBM,STO		
P85251W	5/31/1991	46	71	28	SESE	HOADLEY - GRADY PARTNERSHIP	#1-28 HOADLEY	UNA	STO	12	620
* P9259W	5/24/1971	46	71	28	SWNW	INEXCO OIL CO.	GRADY UNIT WATER WELL #2	PU	IND	357	4830
P113552W	1/14/1999	46	71	29	NWSW	LANCE OIL & GAS COMPANY, INC	WAGENSEN 13-29-4671	GST	STO,CBM	26	376
P113553W	1/14/1999	46	71	29	SENE	LANCE OIL & GAS COMPANY, INC	WAGENSEN 22-29-4671	GST	STO,CBM	26	342
P113554W	1/14/1999	46	71	29	SESW	LANCE OIL & GAS COMPANY, INC	WAGENSEN 24-29-4671	GST	STO,CBM	26	385
P122406W	1/24/2000	46	71	29	NWNW	DUNCAN OIL, INC.	EAGLE 11-29	GST	CBM	15	363
P122407W	1/24/2000	46	71	29	NENW	DUNCAN OIL, INC.	EAGLE 12-29	GST	CBM	15	340
P133435W	3/23/2001	46	71	29	SWNE	RIM OPERATING, INC	CBM A #32-29	GST	STO,CBM		448
P133436W	3/23/2001	46	71	29	NENE	RIM OPERATING, INC	CBM A #41-29	GST	STO,CBM		405
P146098W	7/19/2002	46	71	29	SWSE	RIM OPERATING, INC.	CBM A #34-29	GST	STO,CBM		505
P146099W	7/19/2002	46	71	29	NESE	RIM OPERATING, INC.	CBM A # 43-29	GST	STO,CBM		475
P153535W	8/1/2003	46	71	29	SWSE	RIM OPERATING, INC.	CBM A #34-29 ANDERSON	GST	STO,CBM		250
* P161697W	8/23/2004	46	71	29	NESE	RIM OPERATING, INC.	CBM A #21-28	GSI	CBM,STO		
P113555W	1/14/1999	46	71	30	SENE	LANCE OIL & GAS COMPANY, INC	WAGENSEN 42-30-4671	GST	STO,CBM	25	393
P122404W	1/24/2000	46	71	30	NWNE	DUNCAN OIL, INC.	EAGLE 31-30	GST	CBM	15	388

Appendix E

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
P122405W	1/24/2000	46	71	30	NENE	DUNCAN OIL, INC.	EAGLE 41-30	GST	CBM	15	424
* P126084W	6/9/2000	46	71	30	NENE	DUNCAN OIL, INC.	EAGLE BLOWER FACILITY	GST	IND	30	-1
P105545W	4/14/1997	46	72	1	SWNE	BARRETT RESOURCES CORPORATION	PICKREL #1-12	GST	CBM	25	561
* P105547W	4/14/1997	46	72	1	NESW	BARRETT RESOURCES CORPORATION	PICKREL #1-23	GST	CBM	25	505
* P105547W	4/14/1997	46	72	1	SESW	BARRETT RESOURCES CORPORATION	PICKREL #1-23	GST	CBM	25	505
P105548W	4/14/1997	46	72	1	SESW	BARRETT RESOURCES CORPORATION	PICKREL #1-24	GST	CBM	21.44	477
P106272W	6/4/1997	46	72	1	NENW	BARRETT RESOURCES CORPORATION	PICKREL #1-21	GST	CBM	24.83	542
* P106909W	7/25/1997	46	72	1	SESE	LANCE OIL & GAS COMPANY, INC	PICKREL #6-14	GST	CBM	23.8	384
* P106913W	7/25/1997	46	72	1	SWSE	BARRETT RESOURCES CORPORATION	PICKREL #1-34	GST	CBM	25	444
* P106913W	7/25/1997	46	72	1	SESE	BARRETT RESOURCES CORPORATION	PICKREL #1-34	GST	CBM	25	444
P106914W	7/25/1997	46	72	1	SESE	BARRETT RESOURCES CORPORATION	PICKREL #1-44	GST	CBM	24	397
* P162471W	8/27/2004	46	72	1	NENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	46	72	1	NWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	46	72	1	SWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	46	72	1	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	46	72	1	NENW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	46	72	1	NWNW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	46	72	1	SWNW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	46	72	1	NESW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	46	72	1	SESW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	46	72	1	NESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	46	72	1	NWSE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	46	72	1	SWSE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	46	72	1	SESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
P29024P	2/4/1975	46	72	1	SESE	PICKREL LAND & CATTLE CO., INC	TANNER #4	PUW	STO	7.5	80
* P59692W	3/8/1982	46	72	1	NENW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289
* P59692W	3/8/1982	46	72	1	NESW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289
* P59692W	3/8/1982	46	72	1	NESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289
* P59692W	3/8/1982	46	72	1	NWSE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289
* P59693W	3/8/1982	46	72	1	NENW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300
* P59693W	3/8/1982	46	72	1	NESW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300
* P59693W	3/8/1982	46	72	1	NESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300
* P59693W	3/8/1982	46	72	1	NWSE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300
* P59694W	3/8/1982	46	72	1	NENW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59694W	3/8/1982	46	72	1	NESW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59694W	3/8/1982	46	72	1	NESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59694W	3/8/1982	46	72	1	NWSE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59695W	3/8/1982	46	72	1	NENW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270
* P59695W	3/8/1982	46	72	1	NESW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270
* P59695W	3/8/1982	46	72	1	NESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT												
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.	
* P59695W	3/8/1982	46	72	1	NWSE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270	
P105671W	5/7/1997	46	72	12	SESE	FREEDOM HILLS JOINT VENTURE	NEWTON #2	UNA	DOM	18	180	
* P106898W	7/24/1997	46	72	12	NENE	LANCE OIL & GAS COMPANY, INC	CLOSE #7-11	GST	CBM	25	3754	
P106902W	7/24/1997	46	72	12	NENE	BARRETT RESOURCES CORPORATION	CLOSE #12-41	GST	CBM	26	396	
* P109929W	5/6/1998	46	72	12	SESE	FREEDOM HILLS JOINT VENTURES	MADER #1	UNA	DOM	10	250	
* P109929W	5/6/1998	46	72	12	NWSE	FREEDOM HILLS JOINT VENTURES	MADER #1	UNA	DOM	10	250	
P114441W	3/8/1999	46	72	12	SENE	BARRETT RESOURCES CORPORATION	OSBORN TRUST 12-22-4672	GST	STO,CBM	45	495	
* P162471W	8/27/2004	46	72	12	NENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS			
* P162471W	8/27/2004	46	72	12	NWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS			
* P162471W	8/27/2004	46	72	12	SWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS			
* P162471W	8/27/2004	46	72	12	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS			
* P162471W	8/27/2004	46	72	12	NENW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS			
* P162471W	8/27/2004	46	72	12	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS			
* P162471W	8/27/2004	46	72	12	NESW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS			
* P162471W	8/27/2004	46	72	12	SESW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS			
* P162471W	8/27/2004	46	72	12	NESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS			
* P162471W	8/27/2004	46	72	12	NWSE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS			
* P162471W	8/27/2004	46	72	12	SWSE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS			
* P162471W	8/27/2004	46	72	12	SESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS			
P21659P	12/31/1940	46	72	12	SESW	SYLVIA NEWTON	NEWTON #1	PUW	STO	4	100	
P59475W	2/17/1982	46	72	12	NENW	PERRY OSBORNE	OSBORNE #1	PUW	STO	25	320	
* P59692W	3/8/1982	46	72	12	NWNE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289	
* P59692W	3/8/1982	46	72	12	SWNE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289	
* P59692W	3/8/1982	46	72	12	SESW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289	
* P59692W	3/8/1982	46	72	12	NESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289	
* P59692W	3/8/1982	46	72	12	NWSE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289	
* P59692W	3/8/1982	46	72	12	SWSE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289	
* P59693W	3/8/1982	46	72	12	NWNE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300	
* P59693W	3/8/1982	46	72	12	SWNE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300	
* P59693W	3/8/1982	46	72	12	SESW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300	
* P59693W	3/8/1982	46	72	12	NESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300	
* P59693W	3/8/1982	46	72	12	NWSE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300	
* P59693W	3/8/1982	46	72	12	SWSE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300	
* P59694W	3/8/1982	46	72	12	NWNE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200		
* P59694W	3/8/1982	46	72	12	SWNE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200		
* P59694W	3/8/1982	46	72	12	SESW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200		
* P59694W	3/8/1982	46	72	12	NESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200		
* P59694W	3/8/1982	46	72	12	NWSE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200		
* P59694W	3/8/1982	46	72	12	SWSE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200		
* P59695W	3/8/1982	46	72	12	NWNE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270	

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
* P59694W	3/8/1982	46	72	13	NENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59694W	3/8/1982	46	72	13	SENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59694W	3/8/1982	46	72	13	NESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59694W	3/8/1982	46	72	13	SESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59694W	3/8/1982	46	72	13	SESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	DSC	MIS	200	
* P59695W	3/8/1982	46	72	13	SESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PUW	MIS	125	270
* P59695W	3/8/1982	46	72	13	NENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270
* P59695W	3/8/1982	46	72	13	SENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270
* P59695W	3/8/1982	46	72	13	NESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270
* P59695W	3/8/1982	46	72	13	SESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270
* P59695W	3/8/1982	46	72	13	SESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	DSC	MIS	125	270
P60510W	5/4/1982	46	72	13	NESE	WYOMING STATE HIGHWAY DEPARTMENT	BELLE FOURCHE #5	PUW	MON	0	
P99216W	5/15/1995	46	72	13	NWSE	MICHAEL A. & TERRI WEBER	WEBER #1	UNA	DOM,STO	10	240
P142611W	2/8/2002	46	72	24	NESE	DALE / SHARLA DOUGLAS	RAFTER STAR # 1	GST	DOM,STO		162
P147510W	10/14/2002	46	72	24	SENE	DAVID/EVELYN WRIGHT	WRIGHT 1	GST	DOM,STO		383
* P162471W	8/27/2004	46	72	24	NENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	46	72	24	NWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	46	72	24	SWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	46	72	24	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	46	72	24	NESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
P21661P	12/31/1940	46	72	24	NWNE	SYLVIA NEWTON	NEWTON #3	PUW	STO	4	120
* P59692W	3/8/1982	46	72	24	NENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289
* P59692W	3/8/1982	46	72	24	SENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289
* P59692W	3/8/1982	46	72	24	NESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289
* P59693W	3/8/1982	46	72	24	NENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300
* P59693W	3/8/1982	46	72	24	SENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300
* P59693W	3/8/1982	46	72	24	NESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300
* P59694W	3/8/1982	46	72	24	NENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59694W	3/8/1982	46	72	24	SENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59694W	3/8/1982	46	72	24	NESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59695W	3/8/1982	46	72	24	NENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270
* P59695W	3/8/1982	46	72	24	SENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270
* P59695W	3/8/1982	46	72	24	NESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270
* P141256W	12/3/2001	47	70	30	NESW	DCD, INC.	BOOS A-11-30	GSI	CBM		
* P141256W	12/3/2001	47	70	30	SWNE	DCD, INC.	BOOS A-11-30	GSI	CBM		
P15835P	6/20/1958	47	70	30	NWSE	ANGELA A. BOOS TRUST	#1 BOOS	PUW	DOM	10	207
P15842P	5/12/1969	47	70	30	NWSE	ANGELA A. BOOS TRUST	#8 BOOS	PUW	DOM,STO	30	90
P15844P	12/31/1929	47	70	30	NWSE	ANGELA A. BOOS TRUST	#1 MATTHEWS	PUW	DOM,STO	6	60
P25396W	12/18/1973	47	70	30	NESW	ANGELA A. BOOS TRUST	BUCK #1	PUW	STO	-1	173
P15837P	12/24/1959	47	70	31	SENE	ANGELA A. BOOS TRUST	#3 BOOS	PUW	STO	4	190

Appendix E

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
P27439W	7/30/1974	47	70	31	SWSE	ANGELA A. BOOS TRUST	#1 JACK	PUW	STO	10	233
* P99057W	4/24/1995	47	71	2	SESE	PETROGULF CORPORATION	CLABAUGH #41-2 WSW	UNA	IND	30	3400
P5514P	5/8/1958	47	71	4	SWSW	LESLIE CLABAUGH	CLABAUGH #3	PUW	STO	4	210
* P79080W	2/13/1989	47	71	4	NWSW	COMDISCO EXPLORATION	ROYAL DRAW UNIT #1	PUW	MIS	15	10500
P30967W	8/28/1975	47	71	5	SESW	MEADOWLARK FARMS INC.	AMAX #5	PUW	DOM,STO	25	
* P79080W	2/13/1989	47	71	5	NESE	COMDISCO EXPLORATION	ROYAL DRAW UNIT #1	PU	MIS	15	10500
* P79080W	2/13/1989	47	71	5	NWSE	COMDISCO EXPLORATION	ROYAL DRAW UNIT #1	UNA	MIS	15	10500
* P79080W	2/13/1989	47	71	5	NESE	COMDISCO EXPLORATION	ROYAL DRAW UNIT #1	DSC	MIS	15	10500
P130325W	10/16/2000	47	71	6	SESW	HI-PRO PRODUCTION, L.L.C.	DUNLAP 6-24-47-71-A	GST	CBM	25	401
P130326W	10/16/2000	47	71	6	SWSE	HI-PRO PRODUCTION, L.L.C.	DUNLAP 6-34-47-71-A	GST	CBM	25	330
P130327W	10/16/2000	47	71	6	NESE	HI-PRO PRODUCTION, L.L.C.	DUNLAP 6-43-47-71-A	GST	CBM	25	326
P130328W	10/16/2000	47	71	6	SESE	HI-PRO PRODUCTION, L.L.C.	DUNLAP 6-44-47-71-A	GST	CBM	25	341
P130437W	10/25/2000	47	71	6	SWNW	HI-PRO PRODUCTION, L.L.C.	DUNLAP 6-12-47-71-A	GST	CBM	25	330
P130438W	10/25/2000	47	71	6	NWSE	HI-PRO PRODUCTION, L.L.C.	DUNLAP 6-33-47-71-A	GST	CBM	25	301
P130691W	11/3/2000	47	71	6	SESW	HI-PRO PRODUCTION, L.L.C.	RAG 6- 22 - 47 - 71 - A	GST	CBM	25	293
P131775W	12/29/2000	47	71	6	NWNE	HI-PRO PRODUCTION, L.L.C.	DUNLAP 6 - 31 - 47 - 71 - A	GST	CBM		326
P131776W	12/29/2000	47	71	6	NESE	HI-PRO PRODUCTION, L.L.C.	DUNLAP 6 - 23 - 47 - 71 - A	GST	CBM		321
P131777W	12/29/2000	47	71	6	NWSW	HI-PRO PRODUCTION, L.L.C.	DUNLAP 6 - 13 - 47 - 71 - A	GST	CBM		333
P131781W	12/29/2000	47	71	6	NENW	HI-PRO PRODUCTION, L.L.C.	RAG 6-21-47-71-A	GST	CBM		324
P132111W	12/29/2000	47	71	6	SWNW	HI-PRO PRODUCTION, L.L.C.	ENL DUNLAP 6-12-47-71--A	UNA	CBM		
P132112W	12/29/2000	47	71	6	SESW	HI-PRO PRODUCTION, L.L.C.	ENL R.A.G. 6-22-47-71--A	UNA	CBM		
P132113W	12/29/2000	47	71	6	SESW	HI-PRO PRODUCTION, L.L.C.	ENL DUNLAP 6-24-47-71--A	UNA	CBM		
P132114W	12/29/2000	47	71	6	NWSE	HI-PRO PRODUCTION, L.L.C.	ENL DUNLAP 6-33-47-71--A	UNA	CBM		
P132115W	12/29/2000	47	71	6	SWSE	HI-PRO PRODUCTION, L.L.C.	ENL DUNLAP 6-34-47-71--A	UNA	CBM		
P132116W	12/29/2000	47	71	6	NESE	HI-PRO PRODUCTION, L.L.C.	ENL DUNLAP 6-43-47-71--A	UNA	CBM		
P132117W	12/29/2000	47	71	6	SESE	HI-PRO PRODUCTION, L.L.C.	ENL DUNLAP 6-44-47-71--A	UNA	CBM		
* P133817W	4/6/2001	47	71	6	SWNE	HI-PRO PRODUCTION, L.L.C.	DUNLAP 6-32-47-71-A	GST	CBM		313
* P133818W	4/6/2001	47	71	6	SENE	HI-PRO PRODUCTION, L.L.C.	DUNLAP 6-42-47-71-A	GST	CBM		351
P23440P	7/26/1973	47	71	6	NESE	AMAX LAND COMPANY	DUNLAP #6	GST	STO	25	80
P130329W	10/16/2000	47	71	7	SWNW	HI-PRO PRODUCTION, L.L.C.	DUNLAP 7-12-47-71-A	GST	CBM	25	415
P130330W	10/16/2000	47	71	7	SWSW	HI-PRO PRODUCTION, L.L.C.	DUNLAP 7-14-47-71-A	GST	CBM	25	366
P130331W	10/16/2000	47	71	7	NENW	HI-PRO PRODUCTION, L.L.C.	DUNLAP 7-21-47-71-A	GST	CBM	25	416
P130332W	10/16/2000	47	71	7	SESW	HI-PRO PRODUCTION, L.L.C.	DUNLAP 7-22-47-71-A	GST	CBM	25	439
* P130333W	10/16/2000	47	71	7	SESW	HI-PRO PRODUCTION, L.L.C.	DUNLAP 7-24-47-71-A	UNA	CBM	25	
* P130333W	10/16/2000	47	71	7	SWNW	HI-PRO PRODUCTION, L.L.C.	DUNLAP 7-24-47-71-A	UNA	CBM	25	
P130458W	10/25/2000	47	71	7	NENE	HI-PRO PRODUCTION, L.L.C.	DUNLAP 7-41-47-71-A	GST	CBM	25	344
P130459W	10/25/2000	47	71	7	NWNE	HI-PRO PRODUCTION, L.L.C.	DUNLAP 7-31-47-71-A	GST	CBM	25	390
P131773W	12/29/2000	47	71	7	SWNE	HI-PRO PRODUCTION, L.L.C.	DUNLAP 7 - 32 - 47 - 71 - A	GST	CBM		424
P131774W	12/29/2000	47	71	7	NESE	HI-PRO PRODUCTION, L.L.C.	DUNLAP 7 - 23 - 47 - 71 - A	GST	CBM		386
P132118W	12/29/2000	47	71	7	SWNW	HI-PRO PRODUCTION, L.L.C.	ENL DUNLAP 7-12-47-71--A	UNA	CBM		

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT												
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.	
P132119W	12/29/2000	47	71	7	SWSW	HI-PRO PRODUCTION, L.L.C.	ENL DUNLAP 7-14-47-71--A	GST	CBM		366	
P132120W	12/29/2000	47	71	7	NENW	HI-PRO PRODUCTION, L.L.C.	ENL DUNLAP 7-21-47-71--A	UNA	CBM			
P132121W	12/29/2000	47	71	7	SESW	HI-PRO PRODUCTION, L.L.C.	ENL DUNLAP 7-22-47-71--A	UNA	CBM			
P132122W	12/29/2000	47	71	7	NWNE	HI-PRO PRODUCTION, L.L.C.	ENL DUNLAP 7-31-47-71--A	UNA	CBM			
P132123W	12/29/2000	47	71	7	NENE	HI-PRO PRODUCTION, L.L.C.	ENL DUNLAP 7-41-47-71--A	UNA	CBM			
* P133807W	4/6/2001	47	71	7	SESW	HI-PRO PRODUCTION, L.L.C.	ENL DUNLAP 7-24-47-71-A	UNA	CBM		391	
P134269W	4/19/2001	47	71	7	NWSW	HI-PRO PRODUCTION, L.L.C.	DUNLAP 7-13-47-71-A	GST	CBM	0	368	
* P136837W	7/3/2001	47	71	7	SWSW	HI-PRO PRODUCTION, L.L.C.	DUNLAP 7-14-B	GST	CBM		1258	
* P136839W	7/3/2001	47	71	7	NESW	HI-PRO PRODUCTION, L.L.C.	DUNLAP 7-23-B	GST	CBM		1192	
P23441P	7/26/1973	47	71	7	SWSW	AMAX LAND COMPANY	DUNLAP #7 (DEEPENED)	GST	STO	25	140	
P86864W	12/19/1991	47	71	7	NWSW	HI-PRO PRODUCTION, L.L.C.	DUNLAP #7-13	UNA	STO,CBM	20	301	
* P55070W	10/8/1980	47	71	8	SWSW	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650	
P5516P	7/14/1966	47	71	8	SESE	LESLIE CLABAUGH	CLABAUGH #5	PUW	STO	5	120	
P84217W	12/28/1990	47	71	8	SENE	DCD INC.	CLABAUGH #8-8	GST	MIS,DEW,CBM	0	283	
P84218W	12/28/1990	47	71	8	SESE	DCD INC.	CLABAUGH #16-8	GST	MIS,DEW,CBM	0	285	
P5508W	5/19/1970	47	71	9	NWSW	LESLIE CLABAUGH	BAKER #1	PUW	DOM,STO	-1	126	
P84215W	12/28/1990	47	71	9	SESW	DCD INC.	LINNY #6-9	GST	MIS,DEW,CBM	0	242	
P84219W	12/28/1990	47	71	9	SESW	DCD INC.	CLABAUGH #14-9	GST	MIS,DEW,CBM	0	272	
P84591W	3/4/1991	47	71	9	NENW	DCD INC.	LINNY #3-9	UNA	MIS,CBM	35		
P84592W	3/4/1991	47	71	9	NWNW	DCD INC.	LINNY #4-9	UNA	MIS,CBM	35		
P84220W	12/28/1990	47	71	10	SWSW	DCD INC.	CLABAUGH #13-10	GST	MIS,DEW,CBM	0	233	
P84221W	12/28/1990	47	71	10	SWSE	DCD INC.	CLABAUGH #15-10	GST	MIS,DEW,CBM	0	220	
* P139565W	10/2/2001	47	71	13	SWSE	FLYING J OIL & GAS INC	FEDERAL 34-13	GST	IND		4096	
P22622P	3/1/1973	47	71	13	SESE	FLORA M. RAITT	RAITT #2	PUW	STO	5	190	
* P98361W	12/23/1994	47	71	13	SWSE	PURON CORPORATION	PW-P1-1	GSE	IND,MIS	500		
* P98361W	12/23/1994	47	71	13	SESE	PURON CORPORATION	PW-P1-1	GSE	IND,MIS	500		
* P98362W	12/23/1994	47	71	13	SESE	PURON CORPORATION	PW-P1-2	GSE	IND,MIS	500		
* P98362W	12/23/1994	47	71	13	SWSE	PURON CORPORATION	PW-P1-2	GSE	IND,MIS	500		
* P98363W	12/23/1994	47	71	13	NENW	PURON CORPORATION	PW-P1-3	UNA	IND,MIS	500		
* P98363W	12/23/1994	47	71	13	SWSE	PURON CORPORATION	PW-P1-3	UNA	IND,MIS	500		
* P98363W	12/23/1994	47	71	13	SESE	PURON CORPORATION	PW-P1-3	UNA	IND,MIS	500		
P22621P	3/1/1973	47	71	14	NENE	FLORA M. RAITT	RAITT #1	PUW	STO	5	170	
P7294P	7/31/1953	47	71	15	SWNE	FRANK P. SCHNEIDER TRUST B	SCHNEIDER #7	PUW	STO	7.5	315	
P7290P	12/31/1946	47	71	16	SESW	BETTY MAE HETTINGER	SCHNEIDER #3	UNA	STO	7.5	300	
P7291P	12/31/1942	47	71	16	SWSW	CPT. DELBERT W. FOOTE** FRANK P. SCHNEIDER TRUST B	SCHNEIDER #4	UNA	STO	7.5	130	
P84216W	12/28/1990	47	71	16	SWSW	DCD INC.** WYO BOARD OF LAND COMMISSIONERS	STATE #13-16	GST	MIS,DEW,CBM	0	340	
P90939W	2/8/1993	47	71	16	SWNE	STATE BOARD LAND COMMISSIONERS** DCD, INC.	STATE #7-16	GST	MIS,DEW,CBM	0	268	
P90940W	2/8/1993	47	71	16	NESE	STATE BOARD LAND COMMISSIONERS** DCD, INC.	STATE #9-16	GST	MIS,DEW,CBM	0	319	
P90941W	2/8/1993	47	71	16	NESW	STATE BOARD LAND COMMISSIONERS** DCD, INC.	STATE #11-16	GST	MIS,DEW,CBM	0	344	
P90942W	2/8/1993	47	71	16	NWSW	STATE BOARD LAND COMMISSIONERS** DCD, INC.	STATE #12-16	GST	MIS,DEW,CBM	0	368	

Appendix E

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
P90943W	2/8/1993	47	71	16	SESW	STATE BOARD LAND COMMISSIONERS** DCD, INC.	STATE #14-16	GST	MIS,DEW,CBM	0	300
P90944W	2/8/1993	47	71	16	SESE	STATE BOARD LAND COMMISSIONERS** DCD, INC.	STATE #16-16	GST	MIS,DEW,CBM	0	280
P94498W	12/20/1993	47	71	16	NWNE	DCD, INC.**WYO BOARD OF LAND COMMISSIONERS	STATE #2-16	UNA	MIS,DEW,CBM	0	243
P98313W	2/10/1995	47	71	16	NENE	LANCE OIL & GAS COMPANY, INC** WY STATE BOARD OF LAND COMMISSIONERS	STATE 1-16	UNA	CBM	1.46	273
P98314W	2/10/1995	47	71	16	NENW	LANCE OIL & GAS COMPANY, INC** WY STATE BOARD OF LAND COMMISSIONERS	STATE 3-16	UNA	MIS,CBM	0.15	310
P98315W	2/10/1995	47	71	16	SESW	LANCE OIL & GAS COMPANY, INC** WY STATE BOARD OF LAND COMMISSIONERS	STATE 6-16	UNA	MIS,CBM	1.46	370
P98316W	2/10/1995	47	71	16	SENE	LANCE OIL & GAS COMPANY, INC** WY STATE BOARD OF LAND COMMISSIONERS	STATE 8-16	UNA	MIS,CBM	0.15	299
P98317W	2/10/1995	47	71	16	NWSE	LANCE OIL & GAS COMPANY, INC** WY STATE BOARD OF LAND COMMISSIONERS	STATE 10-16	UNA	MIS,CBM	0.15	325
P98318W	2/10/1995	47	71	16	SWSE	LANCE OIL & GAS COMPANY, INC** WY STATE BOARD OF LAND COMMISSIONERS	STATE 15-16	UNA	MIS,CBM	0.15	349
P112458W	10/30/1998	47	71	17	NWNW	BOWDEN ENERGY COMPANY	MU #11-17	GST	CBM	5	413
P112494W	11/3/1998	47	71	17	SWNW	BOWDEN ENERGY COMPANY	MU #12-17	GST	CBM	1	431
P112496W	11/3/1998	47	71	17	SESE	BOWDEN ENERGY COMPANY	MU #44-17	GST	CBM	1	341
P112497W	11/3/1998	47	71	17	SWSE	BOWDEN ENERGY COMPANY	MU #34-17	GST	CBM	0.5	357
P112498W	11/3/1998	47	71	17	NESW	BOWDEN ENERGY COMPANY	MU #23-17	GST	CBM	1	403
P112499W	11/3/1998	47	71	17	NWSW	BOWDEN ENERGY COMPANY	MU #13-17	GST	CBM	3	454
P112500W	11/3/1998	47	71	17	NWSW	BOWDEN ENERGY COMPANY	MU #22-17	GST	CBM	0.4	423
P18700P	12/31/1940	47	71	17	SESE	GLENN HAYDEN	LAKE #6	PUW	STO	5	220
P18701P	12/31/1938	47	71	17	NESW	GLENN HAYDEN	ROYAL #7	PUW	STO	5	140
* P55070W	10/8/1980	47	71	17	SWNE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	17	SENE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	17	NENW	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	17	NWNW	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	17	SWNW	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	17	SESW	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	17	NESE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	17	NWSE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	17	SWSE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	17	SESE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
P105549W	4/14/1997	47	71	18	NWSE	LANCE OIL & GAS COMPANY, INC	HAYDEN #18-33	GST	CBM	25	409
P112459W	10/30/1998	47	71	18	SENE	BOWDEN ENERGY COMPANY	MU #42-18	GST	CBM	1	428
P112460W	10/30/1998	47	71	18	NENE	BOWDEN ENERGY COMPANY	MU #41-18	GST	CBM	1	393
P116720W	6/28/1999	47	71	18	SESW	JN EXPLORATION/PRODUCTION LIMITED PARTNERSHIP	JN DUVALL 18N WELL	GST	CBM	40	358
* P133820W	4/6/2001	47	71	18	NWNW	HI-PRO PRODUCTION, L.L.C.	DUNLAP 18-11-47-71-A	GST	CBM		371
* P133821W	4/6/2001	47	71	18	SWNW	HI-PRO PRODUCTION, L.L.C.	DUNLAP 18-12-47-71-A	GST	CBM		373

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
* P133822W	4/6/2001	47	71	18	NENW	HI-PRO PRODUCTION, L.L.C.	DUNLAP 18-21-47-71-A	GST	CBM		375
* P133823W	4/6/2001	47	71	18	SENE	HI-PRO PRODUCTION, L.L.C.	DUNLAP 18-22-47-71-A	GST	CBM		381
* P136842W	7/3/2001	47	71	18	NWNW	HI-PRO PRODUCTION, L.L.C.	DUNLAP 18-11-B	GSI	CBM		
* P136844W	7/3/2001	47	71	18	NENW	HI-PRO PRODUCTION, L.L.C.	DUNLAP 18-21-B	GSI	CBM		
* P136845W	7/3/2001	47	71	18	SENE	HI-PRO PRODUCTION, L.L.C.	DUNLAP 18-22-B	GST	CBM		1230
* P55070W	10/8/1980	47	71	18	NENE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	18	SENE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
P105550W	4/14/1997	47	71	19	NWNE	LANCE OIL & GAS COMPANY, INC	DUVALL #19-31	GST	CBM	25	343
P105551W	4/14/1997	47	71	19	NWSE	LANCE OIL & GAS COMPANY, INC	DUVALL #19-33	GST	CBM	25	276
P105552W	4/14/1997	47	71	19	NESE	LANCE OIL & GAS COMPANY, INC	DUVALL #19-43	GST	CBM	25	371
P106903W	7/24/1997	47	71	19	SESW	LANCE OIL & GAS COMPANY, INC	FEDERAL #719-24	GST	CBM	0	377
P106905W	7/24/1997	47	71	19	SWSE	LANCE OIL & GAS COMPANY, INC	FEDERAL #719-34	GST	CBM	0	367
P106906W	7/24/1997	47	71	19	SENE	LANCE OIL & GAS COMPANY, INC	FEDERAL #719-42	GST	CBM	0	412
P106907W	7/24/1997	47	71	19	SESE	LANCE OIL & GAS COMPANY, INC	FEDERAL #719-44	GST	CBM	0	382
P116722W	6/28/1999	47	71	19	NENW	JN EXPLORATION/PRODUCTION LIMITED PARTNERSHIP	JN DUVALL 19C WELL	GST	CBM	40	373
P116725W	6/28/1999	47	71	19	SENE	JN EXPLORATION/PRODUCTION LIMITED PARTNERSHIP	JN MANKIN 19F WELL	GST	CBM	40	363
P22588P	2/7/1973	47	71	19	NWNE	KENNETH R. DUVALL	KEN DUVALL #2	PUW	STO	2	30
P22589P	2/7/1973	47	71	19	SWNE	KENNETH R. DUVALL	KEN DUVALL #3	PUW	STO	4	84
P102431W	5/13/1996	47	71	20	SWSW	LANCE OIL & GAS COMPANY, INC	DUVALL CG 14-20	UNA	MIS,CBM	0	376
P102435W	5/28/1996	47	71	20	NESW	LANCE OIL & GAS COMPANY, INC	K&N CG #23-20	UNA	MIS,CBM	0	372
P103860W	9/18/1996	47	71	20	SESW	LANCE OIL & GAS COMPANY, INC	DUVALL #24-20	UNA	MIS,CBM	4	418
P103861W	9/18/1996	47	71	20	NWSW	LANCE OIL & GAS COMPANY, INC	DOI #13-20	UNA	MIS,CBM	2	379
P103862W	9/18/1996	47	71	20	NWNW	LANCE OIL & GAS COMPANY, INC	KD #11-20	UNA	MIS,CBM	6	383
P103863W	9/18/1996	47	71	20	SWNW	LANCE OIL & GAS COMPANY, INC	ND #12-20	UNA	MIS,CBM	6	365
P112495W	11/3/1998	47	71	20	NWNE	BOWDEN ENERGY COMPANY	MU #31-20	GST	CBM	1	357
P22590P	2/7/1973	47	71	20	SWNW	KENNETH R. DUVALL	KEN DUVALL #4	PUW	STO	5	208
P35842W	10/25/1976	47	71	20	NENE	GLENN HAYDEN FAMILY RANCH	HAYDEN RANCH #1	PUW	STO	25	906
* P55070W	10/8/1980	47	71	20	NENW	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	20	NENE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	20	NWNE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	20	SWNE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	20	SENE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	20	SENE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	20	NESE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	20	NWSE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	20	SWSE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	20	SESE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
P72898W	7/16/1986	47	71	20	SWNW	KENNITH R. DURALL	KEN DUVALL V	PUW	STO	25	895
P74336W	4/6/1987	47	71	20	SWSW	CNG PRODUCING COMPANY	ENL PIPER #1	PU	MIS	75	
P104271W	10/8/1996	47	71	21	SWSW	LANCE OIL & GAS COMPANY, INC	HAYDEN 14-21	UNA	MIS,CBM	6	343

Appendix E

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
P104272W	10/8/1996	47	71	21	NWSW	LANCE OIL & GAS COMPANY, INC	LAKE #13-21	UNA	MIS,CBM	11	341
P104460W	11/4/1996	47	71	21	SWNE	BIG BASIN PETROLEUM, LLC	USA 7-21	GST	CBM	0	357
P104461W	11/4/1996	47	71	21	NWNW	BIG BASIN PETROLEUM, LLC	USA 4-21	GST	CBM	0	348
P7288P	9/21/1930	47	71	22	NWSW	FRANK P. SCHNEIDER TRUST B	SCHNEIDER #1	PUW	DOM	7.5	25
P7292P	8/31/1957	47	71	23	NWSE	FRANK P. SCHNEIDER TRUST B	SCHNEIDER #5	PUW	STO	7.5	140
* P139565W	10/2/2001	47	71	24	NENE	FLYING J OIL & GAS INC	FEDERAL 34-13	GST	IND		4096
P15840P	4/28/1961	47	71	24	NESE	ANGELA A. BOOS TRUST	#6 BOOS	PUW	DOM	4	175
P42322W	3/9/1978	47	71	24	NWSE	WAYNE HAIGHT	HAIGHT & CO #1	PUW	STO	25	180
* P51029W	2/4/1980	47	71	24	NWNE	COTTON PETROLEUM CORPORATION	21 24 WSW	PUW	IND	200	
* P51029W	2/4/1980	47	71	24	SWNW	COTTON PETROLEUM CORPORATION	21 24 WSW	PU	IND	200	
* P51029W	2/4/1980	47	71	24	SESE	COTTON PETROLEUM CORPORATION	21 24 WSW	PU	IND	200	
* P98361W	12/23/1994	47	71	24	SENE	PURON CORPORATION	PW-P1-1	GSE	IND,MIS	500	
* P98361W	12/23/1994	47	71	24	NENE	PURON CORPORATION	PW-P1-1	GSE	IND,MIS	500	
* P98361W	12/23/1994	47	71	24	NWNE	PURON CORPORATION	PW-P1-1	GSE	IND,MIS	500	
* P98361W	12/23/1994	47	71	24	SWNE	PURON CORPORATION	PW-P1-1	GSE	IND,MIS	500	
* P98362W	12/23/1994	47	71	24	NENE	PURON CORPORATION	PW-P1-2	GSE	IND,MIS	500	
* P98362W	12/23/1994	47	71	24	NWNE	PURON CORPORATION	PW-P1-2	GSE	IND,MIS	500	
* P98362W	12/23/1994	47	71	24	SWNE	PURON CORPORATION	PW-P1-2	GSE	IND,MIS	500	
* P98362W	12/23/1994	47	71	24	SENE	PURON CORPORATION	PW-P1-2	GSE	IND,MIS	500	
* P98363W	12/23/1994	47	71	24	NENE	PURON CORPORATION	PW-P1-3	UNA	IND,MIS	500	
* P98363W	12/23/1994	47	71	24	NWNE	PURON CORPORATION	PW-P1-3	UNA	IND,MIS	500	
* P98363W	12/23/1994	47	71	24	SWNE	PURON CORPORATION	PW-P1-3	UNA	IND,MIS	500	
* P98363W	12/23/1994	47	71	24	SENE	PURON CORPORATION	PW-P1-3	UNA	IND,MIS	500	
P18726P	4/30/1953	47	71	25	SWNW	MILO HAIGHT	HOME #1	PUW	DOM,STO	4	120
P7293P	12/31/1939	47	71	25	NWNW	FRANK P. SCHNEIDER TRUST B.	SCHNEIDER #6	PUW	STO	7.5	60
P95999W	6/23/1994	47	71	26	SWNE	ST. MARY OPERATING CO	SWBH UNIT WSW #1	UNA	IND	45	1750
P7289P	12/21/1942	47	71	27	NESW	FRANK P. SCHNEIDER TRUST B	SCHNEIDER #2	PUW	STO	5	270
P102428W	5/13/1996	47	71	28	SWSW	LANCE OIL & GAS COMPANY, INC	HAYDEN 3-28	UNA	MIS,CBM	4	687
P102430W	5/13/1996	47	71	28	SWSE	LANCE OIL & GAS COMPANY, INC	HAYDEN CG 34-28	UNA	MIS,CBM	15	300
P102433W	5/13/1996	47	71	28	NENE	LANCE OIL & GAS COMPANY, INC	HAYDEN 8-28	UNA	MIS,CBM	4	775
P104105W	9/30/1996	47	71	28	SESW	LANCE OIL & GAS COMPANY, INC	BH #24-28	UNA	MIS,CBM	4	320
P18695P	12/31/1925	47	71	28	NESE	GLENN HAYDEN	HOME #1	PUW	DOM,STO	10	140
* P55070W	10/8/1980	47	71	28	NENW	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	28	NWNW	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	28	SWNW	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	28	SENE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	28	NESW	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	28	NWSW	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	28	SWSW	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	28	SESW	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
P104270W	10/8/1996	47	71	29	NWSW	LANCE OIL & GAS COMPANY, INC	MH #13-29	UNA	MIS,CBM	14	390
P106612W	7/1/1997	47	71	29	SWSW	LANCE OIL & GAS COMPANY, INC	LH #14-29	GST	CBM	6	368
P107179W	8/18/1997	47	71	29	SWNW	LANCE OIL & GAS COMPANY, INC	GARRETT #29-12	GST	CBM	3.5	449
P107180W	8/18/1997	47	71	29	SENE	LANCE OIL & GAS COMPANY, INC	GARRETT #29-22	GST	CBM	0	459
P109078W	2/17/1998	47	71	29	NWNW	LANCE OIL & GAS COMPANY, INC	GARRETT 29-11 R	GST	STO,CBM	4	463
P109079W	2/17/1998	47	71	29	NESE	LANCE OIL & GAS COMPANY, INC	GARRETT 29-43	GST	STO,CBM	0	477
P18717P	6/30/1945	47	71	29	SENE	MACSY HAIGHT**TESS GARRETT	STRAATSMA #1	PUW	STO	7.5	135
P18718P	12/31/1945	47	71	29	NENW	MACSY HAIGHT**TESS GARRETT	FLOWING #1	PUW	STO	25	40
* P55070W	10/8/1980	47	71	29	NENE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	29	NWNE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	29	SENE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
P102432W	5/13/1996	47	71	30	NWNE	LANCE OIL & GAS COMPANY, INC	SIMMS CG 31-30	UNA	MIS,CBM	3	387
P102436W	5/28/1996	47	71	30	NENE	LANCE OIL & GAS COMPANY, INC	LEO CG #41-30	UNA	MIS,CBM	6	399
P104086W	9/30/1996	47	71	30	SENE	LANCE OIL & GAS COMPANY, INC	SJ #42-30	UNA	MIS,CBM	4	395
P104087W	9/30/1996	47	71	30	SWNE	LANCE OIL & GAS COMPANY, INC	LAS #32-30	UNA	MIS,CBM	10	375
P18727P	12/31/1946	47	71	30	SWNE	MACSY HAIGHT**TESS GARRETT	SIMMS #1	PUW	STO	7.5	100
* P102861W	7/2/1996	47	71	31	NWSW	CITATION OIL AND GAS CORP	STOCK #13-31	UNA	STO,CBM	5	437
* P102861W	7/2/1996	47	71	31	SWNW	CITATION OIL AND GAS CORP	STOCK #13-31	UNA	STO,CBM	5	437
* P102861W	7/2/1996	47	71	31	SWSW	CITATION OIL AND GAS CORP	STOCK #13-31	UNA	STO,CBM	5	437
* P102862W	7/2/1996	47	71	31	NWNW	CITATION OIL AND GAS CORP	STOCK #11-31	UNA	STO,CBM	0	410
* P102862W	7/2/1996	47	71	31	SWNW	CITATION OIL AND GAS CORP	STOCK #11-31	UNA	STO,CBM	0	410
* P102862W	7/2/1996	47	71	31	SWSW	CITATION OIL AND GAS CORP	STOCK #11-31	UNA	STO,CBM	0	410
* P102863W	7/2/1996	47	71	31	SENE	CITATION OIL AND GAS CORP	STOCK #22-31	UNA	STO,MIS,CBM	0	400
* P102863W	7/2/1996	47	71	31	SWNW	CITATION OIL AND GAS CORP	STOCK #22-31	UNA	STO,MIS,CBM	0	400
* P102863W	7/2/1996	47	71	31	SWSW	CITATION OIL AND GAS CORP	STOCK #22-31	UNA	STO,MIS,CBM	0	400
* P102864W	7/2/1996	47	71	31	SESW	CITATION OIL AND GAS CORP	STOCK #24-31	UNA	STO,CBM	7	402
* P102864W	7/2/1996	47	71	31	SWNW	CITATION OIL AND GAS CORP	STOCK #24-31	UNA	STO,CBM	7	402
* P102864W	7/2/1996	47	71	31	SWSW	CITATION OIL AND GAS CORP	STOCK #24-31	UNA	STO,CBM	7	402
* P104242W	10/18/1996	47	71	31	NWSE	CITATION OIL AND GAS CORP	STOCK 33-31	UNA	STO,CBM	0	377
* P104243W	10/18/1996	47	71	31	SENE	CITATION OIL AND GAS CORP	STOCK 42-31	UNA	STO,CBM	0	308
* P104244W	10/18/1996	47	71	31	SESE	CITATION OIL AND GAS CORP	STOCK 44-31	UNA	STO,CBM	0	359
P106500W	6/24/1997	47	71	31	NWNE	CITATION OIL & GAS CORP.	MACSY CG #31-31	GST	CBM	5	351
P45634W	10/13/1978	47	71	31	NWSW	MILO HAIGHT	MILO HAIGHT #1	PUW	STO	20	430
* P88919W	7/16/1992	47	71	31	NESE	RAYMOND T. DUNCAN	HAIGHT 5-31	UNA	IND	31	4721
* P88919W	7/16/1992	47	71	31	NWNE	RAYMOND T. DUNCAN	HAIGHT 5-31	UNA	IND	31	4721
* P104242W	10/18/1996	47	71	32	SWNW	CITATION OIL AND GAS CORP	STOCK 33-31	UNA	STO,CBM	0	377
* P104243W	10/18/1996	47	71	32	SWNW	CITATION OIL AND GAS CORP	STOCK 42-31	UNA	STO,CBM	0	308
* P104244W	10/18/1996	47	71	32	SWNW	CITATION OIL AND GAS CORP	STOCK 44-31	UNA	STO,CBM	0	359
P106321W	6/16/1997	47	71	32	SESE	CITATION OIL AND GAS CORP	KEIDEL 44-32	UNA	STO,CBM	0	321
P106515W	6/23/1997	47	71	32	NWSE	CITATION OIL AND GAS CORP	KEIDEL 33-32	UNA	STO,CBM	0	297

Appendix E

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
P107181W	8/18/1997	47	71	32	NENW	LANCE OIL & GAS COMPANY, INC	GARRETT #32-21	GST	CBM	0	334
P107182W	8/18/1997	47	71	32	NWNE	LANCE OIL & GAS COMPANY, INC	GARRETT #32-31	GST	CBM	0	353
P102429W	5/13/1996	47	71	33	SWNE	LANCE OIL & GAS COMPANY, INC	HAIGHT 4-33	UNA	MIS,CBM	3	775
P102434W	5/13/1996	47	71	33	NENW	LANCE OIL & GAS COMPANY, INC	HAIGHT 1-33	UNA	MIS,CBM	4	662
P107183W	8/18/1997	47	71	33	NWNW	LANCE OIL & GAS COMPANY, INC	GARRETT #33-11	GST	CBM	0	360
P108043W	11/4/1997	47	71	33	SENE	LANCE OIL & GAS COMPANY, INC	SMW 22-33	GST	CBM	2	327
P108044W	11/4/1997	47	71	33	SENE	LANCE OIL & GAS COMPANY, INC	SML 42-33	GST	CBM	5	319
P108045W	11/4/1997	47	71	33	NWNE	LANCE OIL & GAS COMPANY, INC	SMH 31-33	GST	CBM	6	306
P108046W	11/4/1997	47	71	33	NENE	LANCE OIL & GAS COMPANY, INC	SMM 41-33	GST	CBM	7	282
P18696P	12/31/1919	47	71	33	SESE	GLENN HAYDEN	HARRIS #2	PUW	DOM,STO	5	35
P27535W	7/31/1974	47	71	33	NENE	MACSY HAIGHT**TESS GARRETT	ANNS #1	PUW	STO	10	500
* P30959W	8/19/1975	47	71	33	NENE	MACSY HAIGHT**TESS GARRETT	ENL ANNS #1	PUW	TEM,IND,DRI	25	500
* P30959W	8/19/1975	47	71	33	NESW	MACSY HAIGHT**TESS GARRETT	ENL ANNS #1	PU	TEM,IND,DRI	25	500
P33978W	6/17/1976	47	71	33	SENE	DALE HETTINGER	HETTINGER #1	PUW	MIS,DOM	25	623
* P55070W	10/8/1980	47	71	33	NWNE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	33	SWNE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	33	NENW	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	33	NWNW	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	33	SWNW	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
* P55070W	10/8/1980	47	71	33	SENE	BOWDEN ENERGY COMPANY	DUVALL 1 20	GST	IND	181	4650
P98612W	3/20/1995	47	71	33	NESW	LANCE OIL & GAS COMPANY, INC	HAIGHT #33-23	GST	STO,MIS,CBM	25	305
P98614W	3/20/1995	47	71	33	NWSE	LANCE OIL & GAS COMPANY, INC	HAIGHT #33-33	GST	STO,CBM	25	288
P98615W	3/20/1995	47	71	33	SWSE	LANCE OIL & GAS COMPANY, INC	HAIGHT #33-34	GST	STO,CBM	25	293
P18697P	12/31/1939	47	71	34	NENE	GLENN HAYDEN	BAKKER #3	PUW	STO	5	130
P18698P	12/31/1950	47	71	34	SWSE	GLENN HAYDEN	MC VAY 4	PUW	STO	5	270
P18699P	12/31/1945	47	71	34	SWNW	GLENN HAYDEN	BAKKER #5	PUW	STO	5	85
* P51029W	2/4/1980	47	71	34	SWSE	COTTON PETROLEUM CORPORATION	21 24 WSW	PU	IND	200	
* P56976W	6/3/1981	47	71	34	NENW	DAVIS OIL COMPANY	DAVIS HOADLEY #1	PU	MIS	85	965
* P56976W	6/3/1981	47	71	34	SWSW	DAVIS OIL COMPANY	DAVIS HOADLEY #1	PU	MIS	85	965
* P101340W	1/29/1996	47	71	36	NWSE	WYO BOARD OF LAND COMMISSIONERS**CRAMER OIL COMPANY	STATE 36-10	UNA	IND	26	4400
P104315W	10/23/1996	47	71	36	SESW	WYO BOARD OF LAND COMMISSIONERS**ANGELA A. MATTHEWS, FAMILY TRUST	SS-026-95	UNA	STO	25	280
P18719P	12/31/1940	47	71	36	NWNE	STATE OF WYOMING**MACSY HAIGHT**TESS GARRETT	SCHOOL SECTION #1	PUW	STO	7.5	85
P71205W	9/25/1985	47	71	36	SWSW	WY BOARD OF LAND COMMISSIONERS** JACK & ANGELA BOOS TRUST	BFR 1	PUW	STO	3	125
* P94245W	1/1/1993	47	71	36	SWSE	WYO BOARD OF LAND COMMISSIONERS** UNION OIL COMPANY OF CALIFORNIA	36-15 (STATE)	UNA	IND	15	
P130321W	10/16/2000	47	72	1	NWSE	HI-PRO PRODUCTION, L.L.C.	DUNLAP 1-33-47-72A	GST	CBM	25	373
P130322W	10/16/2000	47	72	1	SWSE	HI-PRO PRODUCTION, L.L.C.	DUNLAP 1-34-47-72A	GST	CBM	25	366
P130323W	10/16/2000	47	72	1	NESE	HI-PRO PRODUCTION, L.L.C.	DUNLAP 1-43-47-72-A	UNA	CBM	25	350
P130324W	10/16/2000	47	72	1	SESE	HI-PRO PRODUCTION, L.L.C.	DUNLAP 1-44-47-72-A	GST	CBM	25	368

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
P130384W	10/25/1999	47	72	1	SENW	HI-PRO PRODUCTION, L.L.C.	ENL MORGAN #1-22	GST	STO,CBM		354
* P130385W	10/25/1999	47	72	1	SENW	HI-PRO PRODUCTION, L.L.C.	ENL MORGAN #1-24	GST	STO,CBM		399
* P130385W	10/25/1999	47	72	1	SWNW	HI-PRO PRODUCTION, L.L.C.	ENL MORGAN #1-24	GST	STO,CBM		399
P130689W	11/3/2000	47	72	1	SWSW	HI-PRO PRODUCTION, L.L.C.	RAG 1-14-47-72-A	GST	CBM	25	420
P130690W	11/3/2000	47	72	1	NENW	HI-PRO PRODUCTION, L.L.C.	RAG 1- 21 - 47 -72 - A	GST	CBM	25	347
P132109W	12/29/2000	47	72	1	SWSW	HI-PRO PRODUCTION, L.L.C.	ENL R.A.G. 1-14-47-72-A	UNA	CBM		
P132110W	12/29/2000	47	72	1	NENW	HI-PRO PRODUCTION, L.L.C.	ENL R.A.G. 1-21-47-72-A	UNA	CBM		
P132149W	12/29/2000	47	72	1	SWSE	HI-PRO PRODUCTION, L.L.C.	ENL DUNLAP 1-34-47-72 - A	UNA	CBM		
P132150W	12/29/2000	47	72	1	NWSE	HI-PRO PRODUCTION, L.L.C.	ENL DUNLAP 1-33-47-72 - A	UNA	CBM		
* P133780W	4/6/2001	47	72	1	NESE	HI-PRO PRODUCTION, L.L.C.	ENL. DUNLAP 1-43-47-72-A	GST	CBM	0	350
* P133781W	4/6/2001	47	72	1	SESE	HI-PRO PRODUCTION, L.L.C.	ENL. DUNLAP 1-44-47-72-A	UNA	CBM		
* P133804W	4/6/2001	47	72	1	NWSW	HI-PRO PRODUCTION, L.L.C.	ENL. MORGAN 1-13	UNA	CBM		383
* P133825W	4/6/2001	47	72	1	NESW	HI-PRO PRODUCTION, L.L.C.	RAG 1-23-47-72-A	GST	CBM		376
* P162471W	8/27/2004	47	72	1	NENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	1	NWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	1	SWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	1	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	1	NENW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	1	NWNW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	1	SWNW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	1	SENW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	1	NESW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	1	NWSW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	1	SWSW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	1	SESW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	1	NESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	1	NWSE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	1	SWSE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	1	SESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
P60492W	5/3/1982	47	72	1	SWNW	WYOMING STATE HIGHWAY DEPARTMENT	CABALLO #2	PUW	MON	0	300
* P90600W	12/31/1992	47	72	1	NWSW	HI-PRO PRODUCTION, L.L.C.	MORGAN #1-13	UNA	STO,CBM	20	383
* P90600W	12/31/1992	47	72	1	SENW	HI-PRO PRODUCTION, L.L.C.	MORGAN #1-13	UNA	STO,CBM	20	383
P90601W	12/31/1992	47	72	1	SENW	HI-PRO PRODUCTION, L.L.C.	MORGAN #1-22	UNA	STO,CBM	20	353
* P90602W	12/31/1992	47	72	1	SESW	HI-PRO PRODUCTION, L.L.C.	MORGAN #1-24	UNA	STO,CBM	20	400
* P90602W	12/31/1992	47	72	1	SENW	HI-PRO PRODUCTION, L.L.C.	MORGAN #1-24	UNA	STO,CBM	20	400
P92384W	7/15/1993	47	72	1	SWNW	HI-PRO PRODUCTION, L.L.C.	MORGAN #1-12	UNA	STO,CBM	25	359
P104203W	3/1/1996	47	72	2	NWNE	TORCH OPERATING CO	ENL FEDERAL #2-31	UNA	MIS,STO,CBM	5	360.5
* P104216W	3/18/1996	47	72	2	NWNE	TORCH OPERATING CO	ENL THOMPSON #35-34	UNA	MIS,STO,CBM	10	392
* P104265W	3/1/1996	47	72	2	NWNE	TORCH OPERATING CO	ENL MCCREERY #1-21	UNA	MIS,STO,CBM	5	464
* P125281W	5/1/2000	47	72	2	SWNE	JM HUBER CORPORATION	FEDERAL 2-32	GST	STO,CBM	25	414

Appendix E

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
* P125281W	5/1/2000	47	72	2	SENE	JM HUBER CORPORATION	FEDERAL 2-32	GST	STO,CBM	25	414
* P125282W	5/1/2000	47	72	2	NENE	JM HUBER CORPORATION	FEDERAL 2-41	GST	STO,CBM	25	415
* P125282W	5/1/2000	47	72	2	SENE	JM HUBER CORPORATION	FEDERAL 2-41	GST	STO,CBM	25	415
P125283W	5/1/2000	47	72	2	SENE	JM HUBER CORPORATION	FEDERAL 2-42	GST	STO,CBM	25	352
P125372W	5/9/2000	47	72	2	SENE	NORTH FINN, LLC	OXBOW #22-2	GST	CBM	25	422
P125373W	5/9/2000	47	72	2	NENW	NORTH FINN, LLC	OXBOW #21-2	UNA	CBM	25	
P125374W	5/9/2000	47	72	2	NWNW	NORTH FINN, LLC	OXBOW #11-2	UNA	CBM	25	
* P125937W	6/2/2000	47	72	2	SENE	JM HUBER CORPORATION	HUBER RAG 35-43-48-72	GST	STO,CBM	25	384
* P125938W	6/2/2000	47	72	2	SENE	JM HUBER CORPORATION	RAG 35-44	GST	STO,CBM	25	400
* P162471W	8/27/2004	47	72	2	NENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	2	NWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	2	SWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	2	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	2	NENW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	2	NWNW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	2	SWNW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	2	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	2	NENW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	2	NESW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	2	NWSW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	2	SWSW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	2	SESW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	2	NESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	2	NWSE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	2	SWSE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	2	SESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P81886W	2/27/1990	47	72	2	NENW	PRESIDIO EXPLORATION INC** LYNDE TRUST	LYNDE 1 2 WSW	UNA	IND	25	4570
* P88829W	6/29/1992	47	72	2	SENE	JM HUBER CORPORATION	THOMPSON #35-34	UNA	STO,CBM	20	392
* P90136W	11/12/1992	47	72	2	NWNE	JM HUBER CORPORATION	FEDERAL #2-31	UNA	STO,CBM	20	360.5
* P90136W	11/12/1992	47	72	2	SENE	JM HUBER CORPORATION	FEDERAL #2-31	UNA	STO,CBM	20	360.5
* P90141W	11/12/1992	47	72	2	SENE	JM HUBER CORPORATION	FEDERAL #35-33	UNA	STO,CBM	20	464
P90656W	1/19/1993	47	72	2	NWNW	MARTENS & PECK OPERATING CO.	MON #2-11-C	UNA	MON	0	410
P90657W	1/19/1993	47	72	2	NWNW	MARTENS & PECK OPERATING CO.	MON #2-11-S	UNA	MON	0	310
P90658W	1/19/1993	47	72	2	NWNW	MARTENS & PECK OPERATING CO.	MON #22-42-C	UNA	MON	0	515.5
* P104256W	3/25/1996	47	72	3	SENE	TORCH OPERATING CO	ENL FEDERAL #3-42	UNA	MIS,STO,CBM	15	414
* P104256W	3/25/1996	47	72	3	NESE	TORCH OPERATING CO	ENL FEDERAL #3-42	UNA	MIS,STO,CBM	15	414
P125284W	5/1/2000	47	72	3	SENE	JM HUBER CORPORATION	FEDERAL 3-31	GST	STO,CBM	25	473
P125371W	5/9/2000	47	72	3	NENE	NORTH FINN, LLC	OXBOW #41-3	GST	CBM	25	474
P131128W	11/20/2000	47	72	3	NWSE	CONOCO PHILLIPS COMPANY	FEDERAL 3-22-47-72	GST	CBM		463
* P131129W	11/20/2000	47	72	3	NESE	CONOCO PHILLIPS COMPANY	FEDERAL 3-43-47-72	GST	CBM		439
* P131129W	11/20/2000	47	72	3	NWSE	CONOCO PHILLIPS COMPANY	FEDERAL 3-43-47-72	GST	CBM		439

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
P131145W	11/20/2000	47	72	3	SWSE	CONOCO PHILLIPS COMPANY	FEDERAL 3-34-47-72	GST	CBM		473
P131168W	11/20/2000	47	72	3	NWSE	CONOCO PHILLIPS COMPANY	FEDERAL 3-21-47-72	GST	CBM		469
P131169W	11/20/2000	47	72	3	NWSE	CONOCO PHILLIPS COMPANY	FEDERAL 3-33R-47-72	GST	CBM		440
P90604W	12/31/1992	47	72	3	SENE	JM HUBER CORPORATION	FEDERAL #3-32	UNA	STO,CBM	25	447
P90605W	12/31/1992	47	72	3	SENE	JM HUBER CORPORATION	FEDERAL #3-42	UNA	STO,CBM	20	414
P104935W	1/27/1997	47	72	10	NENE	MTG OPERATING	HOE CREEK 10-41	UNA	STO,MIS,CBM	25	476
P104936W	1/27/1997	47	72	10	SENE	MTG OPERATING	HOE CREEK 10-42	UNA	STO,MIS,CBM	25	536
P104937W	1/27/1997	47	72	10	NESE	MTG OPERATING	HOE CREEK 10-43	UNA	STO,MIS,CBM	25	544
P112747W	11/5/1998	47	72	10	NWSE	MTG OPERATING	HOE CREEK 10-33	UNA	STO,CBM	7.5	564
P112748W	11/5/1998	47	72	10	SWSE	MTG OPERATING	HOE CREEK 10-34	UNA	STO,CBM	25	
P112749W	11/5/1998	47	72	10	SESE	MTG OPERATING	HOE CREEK 10-44	UNA	STO,CBM	25	564
P99049W	4/21/1995	47	72	10	NWSE	TORCH OPERATING COMPANY	LYNDE TRUST #10-33	UNA	STO,MIS,CBM	25	
* P104075W	9/16/1996	47	72	11	NESE	JN EXPLORATION/PRODUCTION	BREEN UNIT 42X-14 WSW	UNA	IND	37	1220
P104214W	3/18/1996	47	72	11	SENE	TORCH OPERATING CO	ENL MORGAN #11-22	UNA	MIS,STO,CBM	8	416
P104215W	3/18/1996	47	72	11	SENE	TORCH OPERATING CO	ENL MORGAN #11-33	UNA	MIS,STO,CBM	10	466
* P104262W	3/25/1996	47	72	11	SENE	TORCH OPERATING CO	ENL MORGAN #11-23	UNA	MIS,STO,CBM	5	475
* P104262W	3/25/1996	47	72	11	NESW	TORCH OPERATING CO	ENL MORGAN #11-23	UNA	MIS,STO,CBM	5	475
P112750W	11/5/1998	47	72	11	NWNW	MTG OPERATING	HOE CREEK 11-11		STO,CBM	25	438
P112751W	11/5/1998	47	72	11	SWNW	MTG OPERATING	HOE CREEK 11-12		STO,CBM	25	452
P116709W	6/28/1999	47	72	11	NENE	JN EXPLORATION/PRODUCTION LIMITED PARTNERSHIP	JN AMAX #11A WELL	UNA	CBM	40	
P116712W	6/28/1999	47	72	11	SWNE	JN EXPLORATION/PRODUCTION LIMITED PARTNERSHIP	JN AMAX 11G WELL	UNA	CBM	40	
P116713W	6/28/1999	47	72	11	SENE	JN EXPLORATION/PRODUCTION LIMITED PARTNERSHIP	JN AMAX 11H WELL	UNA	CBM	40	
* P125280W	5/1/2000	47	72	11	SWSE	JM HUBER CORPORATION	FEDERAL 11-34	GST	STO,CBM	25	537
* P125280W	5/1/2000	47	72	11	NENW	JM HUBER CORPORATION	FEDERAL 11-34	GST	STO,CBM	25	537
* P128683W	9/5/2000	47	72	11	NENW	J.M. HUBER CORPORATION	HUBER/RAG 11-21	GST	CBM	30	459
* P128683W	9/5/2000	47	72	11	SENE	J.M. HUBER CORPORATION	HUBER/RAG 11-21	GST	CBM	30	459
* P128684W	9/5/2000	47	72	11	NESE	J.M. HUBER CORPORATION	HUBER/RAG 11-43	UNA	CBM	30	
* P128684W	9/5/2000	47	72	11	SENE	J.M. HUBER CORPORATION	HUBER/RAG 11-43	UNA	CBM	30	
P131962W	1/10/2001	47	72	11	SESE	J.M.HUBER CORPORATION	RAG FEDERAL 11-44-47-72	GST	STO,CBM		492
* P162471W	8/27/2004	47	72	11	NENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	11	NWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	11	SWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	11	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	11	NENW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	11	NWNW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	11	SWNW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	11	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	11	NESW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	11	NWSW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	11	SWSW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		

Appendix E

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
* P162471W	8/27/2004	47	72	11	SESW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	11	NESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	11	NWSE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	11	SWSE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	11	SESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
P1844W	5/3/1966	47	72	11	NWNE	ALFREDA DEEVER MORGAN	CABALLO #1	PUW	STO,IRR	1000	
P86866W	12/19/1991	47	72	11	SENW	JM HUBER CORPORATION	MORGAN #11-22	UNA	STO,CBM	20	416
P87749W	2/26/1991	47	72	11	SWNW	I.W. & WINNIE E. LYNDE	LYNDE #11	UNA	STO	25	1200
* P89533W	8/3/1992	47	72	11	NWSE	JM HUBER CORPORATION	MORGAN #11-33	UNA	STO,CBM	20	466
* P89533W	8/3/1992	47	72	11	SENW	JM HUBER CORPORATION	MORGAN #11-33	UNA	STO,CBM	20	466
* P92526W	7/21/1993	47	72	11	NESW	JM HUBER CORPORATION	MORGAN #11-23	UNA	STO,CBM	25	475.5
* P92526W	7/21/1993	47	72	11	SENW	JM HUBER CORPORATION	MORGAN #11-23	UNA	STO,CBM	25	475.5
* P115082W	4/5/1999	47	72	12	NWSW	JN EXPLORATION & PRODUCTION LIMITED PARTNERSHIP	(JN) CABALLO ROJO #12L WELL	GST	CBM	40	438
* P115082W	4/5/1999	47	72	12	NESW	JN EXPLORATION & PRODUCTION LIMITED PARTNERSHIP	(JN) CABALLO ROJO #12L WELL	GST	CBM	40	438
* P115083W	4/5/1999	47	72	12	SWSW	JN EXPLORATION & PRODUCTION LIMITED PARTNERSHIP	(JN) CABALLO ROJO #12M WELL	GST	CBM	40	463
* P115083W	4/5/1999	47	72	12	NESW	JN EXPLORATION & PRODUCTION LIMITED PARTNERSHIP	(JN) CABALLO ROJO #12M WELL	GST	CBM	40	463
P116698W	6/28/1999	47	72	12	NWNE	JN EXPLORATION/PRODUCTION LIMITED PARTNERSHIP	JN CABALLO ROJO 12B WELL	GST	CBM	40	387
P116699W	6/28/1999	47	72	12	SWNE	JN EXPLORATION/PRODUCTION LIMITED PARTNERSHIP	JN CABALLO ROJO 12G WELL	GST	CBM	40	388
P130692W	11/3/2000	47	72	12	SWNW	HI-PRO PRODUCTION L.L.C.	RAG 12 - 12 - A	GST	CBM	25	421
P130693W	11/3/2000	47	72	12	NENW	HI-PRO PRODUCTION L.L.C.	RAG 12 - 21 - A	GST	CBM	25	401
P130694W	11/3/2000	47	72	12	SENW	HI-PRO PRODUCTION L.L.C.	RAG 12 - 22 - A	GST	CBM	25	421
P130695W	11/3/2000	47	72	12	NESE	HI-PRO PRODUCTION L.L.C.	RAG 12 - 43 - A	GST	CBM	25	398
P131778W	12/29/2000	47	72	12	SWSE	HI-PRO PRODUCTION L.L.C.	RAG 12 - 34 - 47 - 72 - A	GST	CBM		403
P131782W	12/29/2000	47	72	12	SESE	HI-PRO PRODUCTION L.L.C.	RAG 12-44-47-72-A	GST	CBM		366
P132124W	12/29/2000	47	72	12	SWNW	HI-PRO PRODUCTION L.L.C.	Enl R.A.G. 12-12--A	UNA	CBM		
P132125W	12/29/2000	47	72	12	NENW	HI-PRO PRODUCTION L.L.C.	Enl R.A.G. 12-21--A	UNA	CBM		
P132126W	12/29/2000	47	72	12	SENW	HI-PRO PRODUCTION L.L.C.	Enl R.A.G. 12-22--A	UNA	CBM		
P132127W	12/29/2000	47	72	12	NESE	HI-PRO PRODUCTION L.L.C.	Enl R.A.G. 12-43--A	UNA	CBM		
* P133805W	4/6/2001	47	72	12	NWNW	HI-PRO PRODUCTION L.L.C.	Enl. MORGAN 12-11	UNA	CBM		411
* P133806W	4/6/2001	47	72	12	NWSE	HI-PRO PRODUCTION L.L.C.	Enl. BREEN 12-33	UNA	CBM		383.5
* P162471W	8/27/2004	47	72	12	NENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	12	NWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	12	SWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	12	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	12	NENW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	12	NWNW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	12	SWNW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	12	SENW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	12	NESW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	12	NWSW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
* P162471W	8/27/2004	47	72	12	SWSW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	12	SESW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	12	NESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	12	NWSE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	12	SWSE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	12	SESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
P30211W	6/20/1975	47	72	12	SWNW	MEADOWLARK FARMS INC.	MCGUIRE 2	PUW	DOM,STO	25	
P86865W	12/19/1991	47	72	12	NWNW	HI-PRO PRODUCTION L.L.C.	MORGAN #12-11	UNA	STO,CBM	20	411
P88827W	6/29/1992	47	72	12	NWSE	HI-PRO PRODUCTION L.L.C.	BREEN #12-33	UNA	STO,CBM	20	383.5
* P104075W	9/16/1996	47	72	13	SWSE	JN EXPLORATION/PRODUCTION	BREEN UNIT 42X-14 WSW	UNA	IND	37	1220
* P115086W	4/5/1999	47	72	13	NWNE	JN EXPLORATION & PRODUCTION LIMITED PARTNERSHIP	(JN) DUVALL #13B WELL	GST	CBM	40	383
* P115086W	4/5/1999	47	72	13	NENE	JN EXPLORATION & PRODUCTION LIMITED PARTNERSHIP	(JN) DUVALL #13B WELL	GST	CBM	40	383
P115088W	4/5/1999	47	72	13	NWNW	JN EXPLORATION & PRODUCTION LIMITED PARTNERSHIP	(JN) DUVALL #13D WELL	GST	CBM	40	488
* P115089W	4/5/1999	47	72	13	SWNW	JN EXPLORATION & PRODUCTION LIMITED PARTNERSHIP	(JN) DUVALL #13E WELL	GST	CBM	40	484
* P115089W	4/5/1999	47	72	13	NWNW	JN EXPLORATION & PRODUCTION LIMITED PARTNERSHIP	(JN) DUVALL #13E WELL	GST	CBM	40	484
P115091W	4/5/1999	47	72	13	SWNE	JN EXPLORATION & PRODUCTION LIMITED PARTNERSHIP	(JN) DUVALL #13G WELL	GST	CBM	40	404
P115094W	4/5/1999	47	72	13	NWSE	JN EXPLORATION & PRODUCTION LIMITED PARTNERSHIP	(JN) DUVALL #13J WELL	GST	CBM	40	433
* P115096W	4/5/1999	47	72	13	SWNW	JN EXPLORATION & PRODUCTION LIMITED PARTNERSHIP	(JN) DUVALL #13L WELL	GST	CBM	40	533
* P115096W	4/5/1999	47	72	13	NWNW	JN EXPLORATION & PRODUCTION LIMITED PARTNERSHIP	(JN) DUVALL #13L WELL	GST	CBM	40	533
P115097W	4/5/1999	47	72	13	SWSE	JN EXPLORATION & PRODUCTION LIMITED PARTNERSHIP	(JN) DUVALL #13O WELL	GST	CBM	40	478
P133908W	4/9/2001	47	72	13	NENW	PEABODY NATURAL GAS, LLC	PNG DUVALL 13C-D WELL	UNA	CBM		
P133915W	4/9/2001	47	72	13	NWSE	PEABODY NATURAL GAS, LLC	PNG DUVALL 13J-D WELL	GST	CBM		1367
P133916W	4/9/2001	47	72	13	NESW	PEABODY NATURAL GAS, LLC	PNG DUVALL 13K-D WELL	GST	CBM		1394
* P162471W	8/27/2004	47	72	13	NENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	13	NWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	13	SWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	13	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	13	NENW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	13	NWNW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	13	SWNW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	13	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	13	NESW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	13	NWSW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	13	SWSW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	13	SESW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	13	NESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	13	NWSE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	13	SWSE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	13	SESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
P22587P	2/7/1973	47	72	13	SESE	KENNETH R. DUVALL	KEN DUVALL #1	PUW	DOM,STO	25	209

Appendix E

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
* P102028W	4/10/1996	47	72	14	NWSW	LANCE OIL & GAS COMPANY, INC	MANKIN #14-13	UNA	MIS,CBM	25	603
* P102029W	4/10/1996	47	72	14	NESW	LANCE OIL & GAS COMPANY, INC	MANKIN #14-23	UNA	MIS,CBM	25	612
* P104075W	9/16/1996	47	72	14	SENE	JN EXPLORATION/PRODUCTION	BREEN UNIT 42X-14 WSW	UNA	IND	37	1220
* P104075W	9/16/1996	47	72	14	SENE	JN EXPLORATION/PRODUCTION	BREEN UNIT 42X-14 WSW	UNA	IND	37	1220
P104210W	3/18/1996	47	72	14	NENW	TORCH OPERATING CO	ENL LYNDE TRUST #14-21	UNA	MIS,STO,CBM	17	542
* P104211W	3/1/1996	47	72	14	NENW	TORCH OPERATING CO	ENL LYNDE TRUST #14-22	UNA	MIS,STO,CBM	15	552
* P104211W	3/1/1996	47	72	14	SENE	TORCH OPERATING CO	ENL LYNDE TRUST #14-22	UNA	MIS,STO,CBM	15	552
* P104212W	3/18/1996	47	72	14	NENW	TORCH OPERATING CO	ENL LYNDE TRUST #15-41	UNA	MIS,STO,CBM	8	561
P112754W	11/5/1998	47	72	14	SWNW	MTG OPERATING COMPANY	HOE CREEK 14-12	GST	STO,CBM	25	585
P116714W	6/28/1999	47	72	14	NESE	JN EXPLORATION/PRODUCTION LIMITED PARTNERSHIP	JN BELL 14I WELL	GST	CBM	40	579
P116715W	6/28/1999	47	72	14	NWSE	JN EXPLORATION/PRODUCTION LIMITED PARTNERSHIP	JN BELL 14J WELL	GST	CBM	40	589
P116716W	6/28/1999	47	72	14	SWSE	JN EXPLORATION/PRODUCTION LIMITED PARTNERSHIP	JN BELL 14O WELL	GST	CBM	40	644
P116717W	6/28/1999	47	72	14	SESE	JN EXPLORATION/PRODUCTION LIMITED PARTNERSHIP	JN BELL 14P WELL	GST	CBM	40	598
* P162471W	8/27/2004	47	72	14	NENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	14	NWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	14	SWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	14	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	14	NENW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	14	NWNW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	14	SWNW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	14	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	14	NESW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	14	NWSW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	14	SWSW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	14	SESW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	14	NESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	14	NWSE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	14	SWSE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	14	SESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
P90026W	11/2/1992	47	72	14	NENW	JM HUBER CORPORATION	LYNDE TRUST #14-21	UNA	STO,CBM	20	542
* P90027W	11/2/1992	47	72	14	SENE	JM HUBER CORPORATION	LYNDE TRUST #14-22	UNA	STO,CBM	20	552
* P90027W	11/2/1992	47	72	14	NENW	JM HUBER CORPORATION	LYNDE TRUST #14-22	UNA	STO,CBM	20	552
* P90029W	11/2/1992	47	72	14	NENW	JM HUBER CORPORATION	LYNDE TRUST #15-41	UNA	STO,CBM	20	561
* P90810W	1/19/1993	47	72	14	SWNE	MARTENS & PECK OPERATING CO.	LYNDE TRUST #14-32	UNA	STO,MIS,CBM	25	
* P90810W	1/19/1993	47	72	14	NENW	MARTENS & PECK OPERATING CO.	LYNDE TRUST #14-32	UNA	STO,MIS,CBM	25	
* P96782W	8/3/1994	47	72	14	SESW	LANCE OIL & GAS COMPANY, INC	MANKIN #14-24	GST	STO,CBM	25	623
* P97258W	8/19/1994	47	72	14	SWSW	LANCE OIL & GAS COMPANY, INC	MANKIN #14-14	GST	STO,CBM	25	631
P97263W	8/19/1994	47	72	14	NENW	MARTENS & PECK OPERATING CO.	STATE #636-12	UNA	STO,MIS,CBM	25	
P100632W	9/11/1995	47	72	15	SWSE	LANCE OIL & GAS COMPANY, INC	HAIGHT #15-34	UNA	STO,CBM	25	643
* P104212W	3/18/1996	47	72	15	NENE	TORCH OPERATING CO	ENL LYNDE TRUST #15-41	UNA	MIS,STO,CBM	8	561

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
P131124W	11/20/2000	47	72	15	SENE	CONOCO PHILLIPS COMPANY	FEDERAL 15-42-47-72	GST	CBM		584
* P90029W	11/2/1992	47	72	15	NENE	JM HUBER CORPORATION	LYNDE TRUST #15-41	UNA	STO.CBM	20	561
* P96783W	8/3/1994	47	72	15	NESE	LANCE OIL & GAS COMPANY, INC	HAIGHT #15-43	GST	STO.CBM	25	589
* P96783W	8/3/1994	47	72	15	NWSE	LANCE OIL & GAS COMPANY, INC	HAIGHT #15-43	GST	STO.CBM	25	589
* P102028W	4/10/1996	47	72	23	NENW	LANCE OIL & GAS COMPANY, INC	MANKIN #14-13	UNA	MIS,CBM	25	603
* P102029W	4/10/1996	47	72	23	NENW	LANCE OIL & GAS COMPANY, INC	MANKIN #14-23	UNA	MIS,CBM	25	612
P126658W	6/29/2000	47	72	23	SWNW	EMERALD OPERATING COMPANY	BELL SEELY 12-23	GST	CBM	40	645
P126659W	6/29/2000	47	72	23	NENE	EMERALD OPERATING COMPANY	BELL SEELY 41-23	GST	CBM	40	624
P126666W	6/29/2000	47	72	23	SWSE	EMERALD OPERATING COMPANY	HAIGHT CBM 34-23	GST	CBM	40	680
* P131126W	11/20/2000	47	72	23	NWSE	CONOCO PHILLIPS COMPANY	FEDERAL 23-33-47-72	GST	CBM		662
* P131126W	11/20/2000	47	72	23	NESW	CONOCO PHILLIPS COMPANY	FEDERAL 23-33-47-72	GST	CBM		662
P131127W	11/20/2000	47	72	23	NESW	CONOCO PHILLIPS COMPANY	FEDERAL 23-23-47-72	GST	CBM		642
* P162471W	8/27/2004	47	72	23	NENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	23	NWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	23	SWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	23	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	23	NENW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	23	NWNW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	23	SWNW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	23	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	23	NESW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	23	NWSW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	23	SESW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	23	NESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	23	NWSE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	23	SWSE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	23	SESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P59692W	3/8/1982	47	72	23	NENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289
* P59692W	3/8/1982	47	72	23	SENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289
* P59692W	3/8/1982	47	72	23	NESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289
* P59692W	3/8/1982	47	72	23	SESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289
* P59693W	3/8/1982	47	72	23	NENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300
* P59693W	3/8/1982	47	72	23	SENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300
* P59693W	3/8/1982	47	72	23	NESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300
* P59693W	3/8/1982	47	72	23	SESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300
* P59694W	3/8/1982	47	72	23	NENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59694W	3/8/1982	47	72	23	SENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59694W	3/8/1982	47	72	23	NESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59694W	3/8/1982	47	72	23	SESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59695W	3/8/1982	47	72	23	NENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270

Appendix E

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
* P59695W	3/8/1982	47	72	23	SENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270
* P59695W	3/8/1982	47	72	23	NESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270
* P59695W	3/8/1982	47	72	23	SESE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270
P68643W	10/4/1984	47	72	23	SESE	MILO AND MACSY HAIGHT	HAIGHT N W #1	PUW	DOM,STO	20	205
* P96782W	8/3/1994	47	72	23	NENW	LANCE OIL & GAS COMPANY, INC	MANKIN #14-24	GST	STO,CBM	25	623
P96784W	8/3/1994	47	72	23	NENW	LANCE OIL & GAS COMPANY, INC	MANKIN #23-21	GST	STO,CBM	25	604
* P96785W	8/3/1994	47	72	23	SENE	LANCE OIL & GAS COMPANY, INC	MANKIN #23-22	GST	STO,CBM	25	619
* P96785W	8/3/1994	47	72	23	NENW	LANCE OIL & GAS COMPANY, INC	MANKIN #23-22	GST	STO,CBM	25	619
* P96786W	8/3/1994	47	72	23	SWNE	LANCE OIL & GAS COMPANY, INC	MANKIN #23-32	GST	STO,CBM	25	643
* P96786W	8/3/1994	47	72	23	NENW	LANCE OIL & GAS COMPANY, INC	MANKIN #23-32	GST	STO,CBM	25	643
* P97258W	8/19/1994	47	72	23	NENW	LANCE OIL & GAS COMPANY, INC	MANKIN #14-14	GST	STO,CBM	25	631
* P97259W	8/19/1994	47	72	23	NWNE	LANCE OIL & GAS COMPANY, INC	MANKIN #23-31	UNA	STO,CBM	25	643
* P97259W	8/19/1994	47	72	23	NENW	LANCE OIL & GAS COMPANY, INC	MANKIN #23-31	UNA	STO,CBM	25	643
* P98652W	3/27/1995	47	72	23	SESE	LANCE OIL & GAS COMPANY, INC	PITTMAN #23-44	UNA	STO,CBM	25	635
P110121W	5/18/1998	47	72	25	SENE	LANCE OIL/GAS COMPANY, INC.	HAIGHT 22-25	GST	STO,CBM	35	1411
P126662W	6/29/2000	47	72	25	NWSW	EMERALD OPERATING COMPANY	HAIGHT CBM 13-25	GST	CBM	40	605
P126663W	6/29/2000	47	72	25	NWNW	EMERALD OPERATING COMPANY	HAIGHT CBM 25-11	GST	CBM	40	598
P126664W	6/29/2000	47	72	25	NWNE	EMERALD OPERATING COMPANY	HAIGHT CBM 31-25	GST	CBM	40	498
P126665W	6/29/2000	47	72	25	NWSE	EMERALD OPERATING COMPANY	HAIGHT CBM 33-25	GST	CBM	40	540
P126667W	6/29/2000	47	72	25	SENE	EMERALD OPERATING COMPANY	HAIGHT CBM 42-25	GST	CBM	40	494
P126668W	6/29/2000	47	72	25	SESE	EMERALD OPERATING COMPANY	HAIGHT CBM 44-25	GST	CBM	40	494
P126671W	6/29/2000	47	72	25	SENE	EMERALD OPERATING COMPANY	HAIGHT CBM 22X-25	GST	CBM	40	590
* P162471W	8/27/2004	47	72	25	NENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	25	NWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	25	SWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	25	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	25	NENW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	25	NWNW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	25	SWNW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	25	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	25	NESW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	25	NWSW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	25	SESW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	25	NESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	25	NWSE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	25	SWSE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	25	SESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P59692W	3/8/1982	47	72	25	NWNW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289
* P59692W	3/8/1982	47	72	25	SWNW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289
* P59692W	3/8/1982	47	72	25	NWSW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
* P59693W	3/8/1982	47	72	25	NWNW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300
* P59693W	3/8/1982	47	72	25	SWNW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300
* P59693W	3/8/1982	47	72	25	NWSW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300
* P59694W	3/8/1982	47	72	25	NWNW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59694W	3/8/1982	47	72	25	SWNW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59694W	3/8/1982	47	72	25	NWSW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59695W	3/8/1982	47	72	25	NWNW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270
* P59695W	3/8/1982	47	72	25	SWNW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270
* P59695W	3/8/1982	47	72	25	NWSW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270
* P98610W	3/20/1995	47	72	25	NENW	WESTERN GAS RESOURCES INC	HAIGHT #25-21	UNA	STO,MIS,CBM	25	
* P98610W	3/20/1995	47	72	25	SENW	WESTERN GAS RESOURCES INC	HAIGHT #25-21	UNA	STO,MIS,CBM	25	
P98611W	3/20/1995	47	72	25	SENW	WESTERN GAS RESOURCES INC	HAIGHT #25-22	UNA	STO,MIS,CBM	25	
P106278W	6/4/1997	47	72	26	SWNE	BARRETT RESOURCES CORPORATION	OSBORN TRUST 12-31	GST	CBM	35	408
P106279W	6/4/1997	47	72	26	SWNE	LANCE OIL & GAS COMPANY, INC	FEDERAL #726-23	GST	MIS,CBM	18	689.5
P108750W	1/30/1998	47	72	26	NWNE	LANCE OIL & GAS COMPANY, INC	HAIGHT 26-31	GST	STO,CBM	7	650
P126661W	6/29/2000	47	72	26	SENE	EMERALD OPERATING COMPANY	HAIGHT 42-26-4772	GST	CBM	40	630
* P162471W	8/27/2004	47	72	26	NENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	26	NWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	26	SWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	26	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	26	NENW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P59692W	3/8/1982	47	72	26	NENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289
* P59692W	3/8/1982	47	72	26	SENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289
* P59693W	3/8/1982	47	72	26	NENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300
* P59693W	3/8/1982	47	72	26	SENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300
* P59694W	3/8/1982	47	72	26	NENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59694W	3/8/1982	47	72	26	SENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59695W	3/8/1982	47	72	26	NENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270
* P59695W	3/8/1982	47	72	26	SENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270
P96787W	8/3/1994	47	72	26	SWNE	LANCE OIL & GAS COMPANY, INC	HAIGHT #26-11	GST	STO,CBM	25	642
P96788W	8/3/1994	47	72	26	SWNE	LANCE OIL & GAS COMPANY, INC	HAIGHT #26-12	GST	STO,CBM	25	681
P96789W	8/3/1994	47	72	26	SWNE	LANCE OIL & GAS COMPANY, INC	HAIGHT #26-22	GST	STO,CBM	25	643
* P98652W	3/27/1995	47	72	26	SWNE	LANCE OIL & GAS COMPANY, INC	PITTMAN #23-44	UNA	STO,CBM	25	635
P99911W	7/24/1995	47	72	26	NENW	LANCE OIL & GAS COMPANY, INC	HAIGHT #26-21	GST	MIS,CBM	25	641.5
P108751W	1/30/1998	47	72	36	SENE	WY STATE BOARD OF LAND COMMISSIONERS** LANCE OIL & GAS COMPANY, INC	STATE 736-42	GST	STO,CBM	15	485
P108752W	1/30/1998	47	72	36	NESE	WY STATE BOARD OF LAND COMMISSIONERS** LANCE OIL & GAS COMPANY, INC	STATE 736-43	GST	STO,CBM	5	498
P108753W	1/30/1998	47	72	36	SESE	WY STATE BOARD OF LAND COMMISSIONERS** LANCE OIL & GAS COMPANY, INC	STATE 736-44	GST	STO,CBM	10	540
P108754W	1/30/1998	47	72	36	NENE	LANCE OIL & GAS COMPANY, INC** WY STATE BOARD OF LAND COMMISSIONERS	STATE 736-41	GST	STO,CBM	12	467

Appendix E

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
* P162471W	8/27/2004	47	72	36	NENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	36	NWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	36	SWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	36	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	36	NENW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	36	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	36	NESW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	36	SESW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	36	NESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	36	NWSE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	36	SWSE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	47	72	36	SESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
P40082W	9/28/1977	47	72	36	SENE	GAME & FISH COMM., STATE OF WYOMING**ATLANTIC RICHFIELD COMPANY	WCH 5	PUW	MON	0	
* P59692W	3/8/1982	47	72	36	SENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289
* P59692W	3/8/1982	47	72	36	NESW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289
* P59692W	3/8/1982	47	72	36	SESW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #1	PU	MIS	0	289
* P59693W	3/8/1982	47	72	36	SENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300
* P59693W	3/8/1982	47	72	36	NESW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300
* P59693W	3/8/1982	47	72	36	SESW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #2	PU	MIS	0	300
* P59694W	3/8/1982	47	72	36	SENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59694W	3/8/1982	47	72	36	NESW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59694W	3/8/1982	47	72	36	SESW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #3	PU	MIS	200	
* P59695W	3/8/1982	47	72	36	SENE	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270
* P59695W	3/8/1982	47	72	36	NESW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270
* P59695W	3/8/1982	47	72	36	SESW	WYOMING STATE HIGHWAY DEPT.	BELLE FOURCHE #4	PU	MIS	125	270
P72107W	2/24/1986	47	72	36	SENE	AMERICAN OIL AND GAS CORPORATION,INC.	WCH 5 (WEST CAMPBELL HYDROLOGICAL)	UNA	MON	0	583
P97265W	8/19/1994	47	72	36	NENW	LANCE OIL & GAS COMPANY, INC** WY STATE BOARD OF LAND COMMISSIONERS	STATE #736-21	GST	STO,CBM	25	567
* P97266W	8/19/1994	47	72	36	SENE	LANCE OIL & GAS COMPANY, INC** WY STATE BOARD OF LAND COMMISSIONERS	STATE #736-22	GST	STO,CBM	25	570
* P97266W	8/19/1994	47	72	36	NENW	LANCE OIL & GAS COMPANY, INC** WY STATE BOARD OF LAND COMMISSIONERS	STATE #736-22	GST	STO,CBM	25	570
P52658W	4/14/1980	48	71	28	SWNE	BEAR CREEK URANIUM	ENL BEAR PIT #1	PU	DEW,RES,IND	0	240
P5511P	4/13/1951	48	71	28	NWSE	AMAX LAND COMPANY	EARL #2	GST	STO	5	130
P23439P	7/26/1973	48	71	29	SWSW	AMAX LAND COMPANY	DUNLAP #5	GST	STO	25	120
P5510P	12/31/1920	48	71	29	NENE	AMAX LAND COMPANY	EARL #1	GST	STO	4	65
P119805W	10/7/1999	48	71	30	NWNW	HI-PRO PRODUCTION, L.L.C.	R.A.G. 30-11	UNA	CBM	30	384
P119806W	10/7/1999	48	71	30	SWNW	HI-PRO PRODUCTION, L.L.C.	R.A.G. 30-12	UNA	CBM	30	364
P119807W	10/7/1999	48	71	30	NWSW	HI-PRO PRODUCTION, L.L.C.	R.A.G. 30-13	UNA	CBM	30	341
P119808W	10/7/1999	48	71	30	SWSW	HI-PRO PRODUCTION, L.L.C.	R.A.G. 30-14	UNA	CBM	30	339

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
P119809W	10/7/1999	48	71	30	NENW	HI-PRO PRODUCTION, L.L.C.	R.A.G. 30-21	UNA	CBM	30	352
P119810W	10/7/1999	48	71	30	SESW	HI-PRO PRODUCTION, L.L.C.	R.A.G. 30-22	UNA	CBM	30	379
P119811W	10/7/1999	48	71	30	NESW	HI-PRO PRODUCTION, L.L.C.	R.A.G. 30-23	UNA	CBM	30	359
P119812W	10/7/1999	48	71	30	SESW	HI-PRO PRODUCTION, L.L.C.	R.A.G. 30-24	UNA	CBM	30	334
P131551W	12/13/2000	48	71	30	NWNW	HI-PRO PRODUCTION L.L.C.	ENL. R.A.G. 30-11	UNA	CBM		384
P131552W	12/13/2000	48	71	30	SWNW	HI-PRO PRODUCTION L.L.C.	ENL. R.A.G. 30-12	UNA	CBM		364
P131553W	12/13/2000	48	71	30	NWSW	HI-PRO PRODUCTION L.L.C.	ENL. R.A.G. 30-13	UNA	CBM		341
P131554W	12/13/2000	48	71	30	SWSW	HI-PRO PRODUCTION L.L.C.	ENL. R.A.G. 30-14	UNA	CBM		339
P131555W	12/13/2000	48	71	30	NENW	HI-PRO PRODUCTION L.L.C.	ENL. R.A.G. 30-21	UNA	CBM		352
P131556W	12/13/2000	48	71	30	SESW	HI-PRO PRODUCTION L.L.C.	ENL. R.A.G. 30-22	UNA	CBM		379
P131557W	12/13/2000	48	71	30	NESW	HI-PRO PRODUCTION L.L.C.	ENL. R.A.G. 30-23	UNA	CBM		359
P131558W	12/13/2000	48	71	30	SESW	HI-PRO PRODUCTION L.L.C.	ENL. R.A.G. 30-24	UNA	CBM		334
P130703W	11/3/2000	48	71	31	NWNW	HI-PRO PRODUCTION L.L.C.	RAG 31-11-48-71-A	GST	CBM	25	351
P130704W	11/3/2000	48	71	31	SWNW	HI-PRO PRODUCTION L.L.C.	RAG 31-12-48-71-A	GST	CBM	25	321
P130708W	11/3/2000	48	71	31	NESW	HI-PRO PRODUCTION L.L.C.	RAG 31-23-48-71-A	UNA	CBM	25	
P132092W	12/29/2000	48	71	31	NWNW	HI-PRO PRODUCTION L.L.C.	ENL R.A.G. 31-11-48-71-A	UNA	CBM		
P132093W	12/29/2000	48	71	31	SWNW	HI-PRO PRODUCTION L.L.C.	ENL R.A.G. 31-12- 48-71- A	UNA	CBM		
P132094W	12/29/2000	48	71	31	NWSW	HI-PRO PRODUCTION L.L.C.	ENL R.A.G. 31-13- 48-71- A	UNA	CBM		
P132095W	12/29/2000	48	71	31	NENW	HI-PRO PRODUCTION L.L.C.	ENL R.A.G. 31-21- 48-71- A	UNA	CBM		
P132096W	12/29/2000	48	71	31	SESW	HI-PRO PRODUCTION L.L.C.	ENL R.A.G. 31-22- 48-71- A	UNA	CBM		
P132097W	12/29/2000	48	71	31	NESW	HI-PRO PRODUCTION L.L.C.	ENL R.A.G. 31-23- 48-71- A	UNA	CBM		
P30968W	8/28/1975	48	71	33	SESE	MEADOWLARK FARMS INC.	AMAX #6	PUW	DOM,STO	25	
P30969W	8/28/1975	48	71	33	SWSE	MEADOWLARK FARMS INC.	AMAX #7	PUW	DOM,STO	25	
P5512P	6/9/1953	48	71	33	SESE	LESLIE CLABAUGH	CLABAUGH #1	PUW	DOM,STO	18	150
P5515P	8/26/1964	48	71	34	NWSW	AMAX LAND COMPANY	CLABAUGH #4	GST	STO	10	114
P66989W	4/6/1984	48	71	34	NWSW	WYOMING STATE HIGHWAY DEPARTMENT	GILLETTE 59-1	PU	MIS	125	276.5
P88920W	7/27/1992	48	71	34	SESW	BALLARD PETROLEUM HOLDINGS LLC	W.D. WATER WELL #1	UNA	IND	60	2070
* P50992W	5/22/1979	48	71	35	NWSW	TRUE OIL COMPANY**ARTHUR CUNDY	CLARK STATE WS 1	UNA	STO,IND	18	1100
* P50992W	5/22/1979	48	71	35	SWSW	TRUE OIL COMPANY**ARTHUR CUNDY	CLARK STATE WS 1	UNA	STO,IND	18	1100
* P50992W	5/22/1979	48	71	35	SESW	TRUE OIL COMPANY**ARTHUR CUNDY	CLARK STATE WS 1	UNA	STO,IND	18	1100
* P99057W	4/24/1995	48	71	35	SESW	PETROGULF CORPORATION	CLABAUGH #41-2 WSW	UNA	IND	30	3400
CU2/524A	2/5/1974	48	72	25	SESW	MARSHALL J. MORGAN AND BEVERLY A. MORGAN	MORGAN #10	PUW	MIS		
CU5/023A	6/1/1982	48	72	25	SESW	MARSHALL JEROME AND BEVERLY ANN MORGAN	MORGAN #20	PUW	MIS,STO		
P119794W	10/7/1999	48	72	25	NWNE	HI-PRO PRODUCTION, L.L.C.	R.A.G. 25-31	UNA	CBM	30	458
P119795W	10/7/1999	48	72	25	SWNE	HI-PRO PRODUCTION, L.L.C.	R.A.G. 25-32	UNA	CBM	30	394
P119796W	10/7/1999	48	72	25	NWSE	HI-PRO PRODUCTION, L.L.C.	R.A.G. 25-33	UNA	CBM	30	384
P119797W	10/7/1999	48	72	25	SWSE	HI-PRO PRODUCTION, L.L.C.	R.A.G. 25-34	UNA	CBM	30	418
P119798W	10/7/1999	48	72	25	NENE	HI-PRO PRODUCTION, L.L.C.	R.A.G. 25-41	GST	CBM	30	389
P119799W	10/7/1999	48	72	25	NESE	HI-PRO PRODUCTION, L.L.C.	R.A.G. 25-43	UNA	CBM	30	354
P119800W	10/7/1999	48	72	25	SESE	HI-PRO PRODUCTION, L.L.C.	R.A.G. 25-44	UNA	CBM	30	370

Appendix E

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
P131543W	12/13/2000	48	72	25	NWNE	HI-PRO PRODUCTION L.L.C.	ENL. R.A.G. 25-31	UNA	CBM		458
P131544W	12/13/2000	48	72	25	SWNE	HI-PRO PRODUCTION L.L.C.	ENL. R.A.G. 25-32	UNA	CBM		394
P131545W	12/13/2000	48	72	25	NWSE	HI-PRO PRODUCTION L.L.C.	ENL. R.A.G. 25-33	UNA	CBM		384
P131546W	12/13/2000	48	72	25	SWSE	HI-PRO PRODUCTION L.L.C.	ENL. R.A.G. 25-34	UNA	CBM		418
P131547W	12/13/2000	48	72	25	NENE	HI-PRO PRODUCTION L.L.C.	ENL. R.A.G. 25-41	GST	CBM		389
P131549W	12/13/2000	48	72	25	NESE	HI-PRO PRODUCTION L.L.C.	ENL. R.A.G. 25-43	UNA	CBM		354
P131550W	12/13/2000	48	72	25	SESE	HI-PRO PRODUCTION L.L.C.	ENL. R.A.G. 25-44	UNA	CBM		370
* P162471W	8/27/2004	48	72	25	NENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	25	NWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	25	SWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	25	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	25	SWNW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	25	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	25	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	25	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	25	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	25	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	25	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	25	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	25	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	25	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	25	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	25	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
P1724W	5/3/1966	48	72	25	SENE	MARSHALL JEROME MORGAN	#1 MORGAN	PUW	STO,IRR,DOM	200	
P26012W	2/5/1974	48	72	25	SENE	MARSHALL JEROME AND BEVERLY MORGAN	MORGAN #10	PUW	DOM	15	190
P29727W	4/29/1975	48	72	25	SENE	ROBERT W. & BEVERLY B. LAWSON	LAWSON #1	PUW	DOM	10	222
P60494W	5/3/1982	48	72	25	NWSW	WYOMING STATE HIGHWAY DEPARTMENT	CABALLO #4	PUW	MON	0	
P61463W	6/1/1982	48	72	25	SENE	MARSHAL JEROME & BEVERLY ANN MORGAN	MORGAN #20	PUW	STO,MIS	15	180
P68719W	10/1/1984	48	72	25	SENE	MARSHALL J. AND BEVERLY A. MORGAN	ENL MORGAN #10 WELL	PUW	STO	0	190
* P104216W	3/18/1996	48	72	35	SWSE	TORCH OPERATING CO	ENL THOMPSON #35-34	UNA	MIS,STO,CBM	10	392
* P104265W	3/1/1996	48	72	35	NWSE	TORCH OPERATING CO	ENL MCCREERY #1-21	UNA	MIS,STO,CBM	5	464
P125365W	5/9/2000	48	72	35	SWSW	NORTH FINN, LLC	OXBOW #14-35	GST	CBM	25	399
P125366W	5/9/2000	48	72	35	NWSW	NORTH FINN, LLC	OXBOW #13-35	GST	CBM	25	418
P125367W	5/9/2000	48	72	35	SWNW	NORTH FINN, LLC	OXBOW #12-35	GST	CBM	25	511
P125928W	6/2/2000	48	72	35	NENW	JM HUBER CORPORATION	RAG 35-21	GST	STO,CBM	25	431
P125934W	6/2/2000	48	72	35	NWNE	JM HUBER CORPORATION	HUBER RAG 35-31-48-72	GST	STO,CBM	25	429
* P125935W	6/2/2000	48	72	35	NENE	JM HUBER CORPORATION	HUBER RAG 35-41-48-72	GST	STO,CBM	25	372
* P125935W	6/2/2000	48	72	35	SENE	JM HUBER CORPORATION	HUBER RAG 35-41-48-72	GST	STO,CBM	25	372
P125936W	6/2/2000	48	72	35	SENE	JM HUBER CORPORATION	HUBER RAG 35-42-48-72	GST	STO,CBM	25	367
* P125937W	6/2/2000	48	72	35	NESE	JM HUBER CORPORATION	HUBER RAG 35-43-48-72	GST	STO,CBM	25	384
* P125938W	6/2/2000	48	72	35	SESE	JM HUBER CORPORATION	RAG 35-44	GST	STO,CBM	25	400
P134270W	4/19/2001	48	72	35	SENE	NORTH FINN, LLC	OXBOW #22-35	GST	CBM	0	481

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
P134271W	4/19/2001	48	72	35	NESW	NORTH FINN, LLC	OXBOW #23-35	GST	CBM		450
P23442P	7/26/1973	48	72	35	NENW	AMAX LAND COMPANY	DUNLAP #8	GST	STO	25	120
P70776W	7/31/1985	48	72	35	NWSW	SABINE CORPORATION** I. W. LYNDE TRUST	LYNDE TRUST #1	PUW	STO	25	720
P76634W	4/25/1988	48	72	35	NWSE	AMAX LAND COMPANY	BA RANCH 24 12 HARROD	UNA	STO,MIS,DOM	100	1463
* P81886W	2/27/1990	48	72	35	SESE	PRESIDIO EXPLORATION INC** LYNDE TRUST	LYNDE 1 2 WSW	UNA	IND	25	4570
* P88829W	6/29/1992	48	72	35	SWSE	JM HUBER CORPORATION	THOMPSON #35-34	UNA	STO,CBM	20	392
* P90141W	11/12/1992	48	72	35	NWSE	JM HUBER CORPORATION	FEDERAL #35-33	UNA	STO,CBM	20	464
* P90619W	12/31/1992	48	72	35	SWNE	JM HUBER CORPORATION	THOMPSON #35-32	UNA	STO,CBM	20	435
* P104201W	3/1/1996	48	72	36	NWSW	WYO BOARD OF LAND COMMISSIONERS** TORCH OPERATING CO	ENL STATE #36-13	UNA	MIS,STO,CBM	5	340
* P104201W	3/1/1996	48	72	36	SWSW	WYO BOARD OF LAND COMMISSIONERS** TORCH OPERATING CO	ENL STATE #36-13	UNA	MIS,STO,CBM	5	340
P104263W	3/25/1996	48	72	36	SWSW	TORCH OPERATING CO	ENL STATE #36-14	UNA	MIS,STO,CBM	5	370
P104264W	3/25/1996	48	72	36	NWSE	TORCH OPERATING CO	ENL STATE #36-33	UNA	MIS,STO,CBM	5	328
P130383W	10/25/1999	48	72	36	NWSE	HI-PRO PRODUCTION L.L.C.** WY STATE BOARD OF LAND COMMISSIONERS	2ND ENL STATE #36-33	GST	STO,CBM		330
P130386W	10/25/1999	48	72	36	SWNW	HI-PRO PRODUCTION L.L.C.** WY STATE BOARD OF LAND COMMISSIONERS	ENL STATE # 36-12	GST	STO,CBM		337
P132142W	12/29/2000	48	72	36	NWSW	HI-PRO PRODUCTION L.L.C.	ENL STATE # 36 13	UNA	CBM		340
P132143W	12/29/2000	48	72	36	SWSW	HI-PRO PRODUCTION L.L.C.	ENL STATE # 36 14	UNA	CBM		370
P132144W	12/29/2000	48	72	36	NWSE	HI-PRO PRODUCTION L.L.C.	ENL STATE # 36-33	UNA	CBM		330
* P133780W	4/6/2001	48	72	36	SWSW	HI-PRO PRODUCTION L.L.C.	ENL. DUNLAP 1-43-47-72-A	GST	CBM	0	350
* P133781W	4/6/2001	48	72	36	SWSW	HI-PRO PRODUCTION L.L.C.	ENL. DUNLAP 1-44-47-72-A	UNA	CBM		
P133803W	4/6/2001	48	72	36	SWNW	HI-PRO PRODUCTION L.L.C.	2ND ENL. STATE 36-12	UNA	CBM		337
* P133804W	4/6/2001	48	72	36	SWSW	HI-PRO PRODUCTION L.L.C.	ENL. MORGAN 1-13	UNA	CBM		383
* P133805W	4/6/2001	48	72	36	SWSW	HI-PRO PRODUCTION L.L.C.	ENL. MORGAN 12-11	UNA	CBM		411
* P133806W	4/6/2001	48	72	36	SWSW	HI-PRO PRODUCTION L.L.C.	ENL. BREEN 12-33	UNA	CBM		383.5
* P133807W	4/6/2001	48	72	36	SWSW	HI-PRO PRODUCTION L.L.C.	ENL. DUNLAP 7-24-47-71-A	UNA	CBM		391
* P133817W	4/6/2001	48	72	36	SWSW	HI-PRO PRODUCTION L.L.C.	DUNLAP 6-32-47-71-A	GST	CBM		313
* P133818W	4/6/2001	48	72	36	SWSW	HI-PRO PRODUCTION L.L.C.	DUNLAP 6-42-47-71-A	GST	CBM		351
P133819W	4/6/2001	48	72	36	SWSW	HI-PRO PRODUCTION L.L.C.	DUNLAP 17-14-48-71-A	GST	CBM		432
* P133820W	4/6/2001	48	72	36	SWSW	HI-PRO PRODUCTION L.L.C.	DUNLAP 18-11-47-71-A	GST	CBM		371
* P133821W	4/6/2001	48	72	36	SWSW	HI-PRO PRODUCTION L.L.C.	DUNLAP 18-12-47-71-A	GST	CBM		373
* P133822W	4/6/2001	48	72	36	SWSW	HI-PRO PRODUCTION L.L.C.	DUNLAP 18-21-47-71-A	GST	CBM		375
* P133823W	4/6/2001	48	72	36	SWSW	HI-PRO PRODUCTION L.L.C.	DUNLAP 18-22-47-71-A	GST	CBM		381
P133824W	4/6/2001	48	72	36	SWSW	HI-PRO PRODUCTION L.L.C.	DUNLAP 24-34-48-72-A	GST	CBM		446
* P133825W	4/6/2001	48	72	36	SWSW	HI-PRO PRODUCTION L.L.C.	RAG 1-23-47-72-A	GST	CBM		376
* P134114W	4/13/2001	48	72	36	NWNW	HI-PRO PRODUCTION L.L.C.** WY STATE BOARD OF LAND COMMISSIONERS	STATE 36-11-48-72-A	GST	CBM		367
* P134114W	4/13/2001	48	72	36	SWNW	HI-PRO PRODUCTION L.L.C.** WY STATE BOARD OF LAND COMMISSIONERS	STATE 36-11-48-72-A	GST	CBM		367
* P134115W	4/13/2001	48	72	36	NWNE	HI-PRO PRODUCTION L.L.C.** WY STATE BOARD OF LAND COMMISSIONERS	STATE 36-31-48-72-A	GST	CBM		375

Appendix E

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
* P134115W	4/13/2001	48	72	36	SWSW	HI-PRO PRODUCTION L.L.C.** WY STATE BOARD OF LAND COMMISSIONERS	STATE 36-31-48-72-A	GST	CBM		375
* P134116W	4/13/2001	48	72	36	SWNE	HI-PRO PRODUCTION L.L.C.** WY STATE BOARD OF LAND COMMISSIONERS	STATE 36-32-48-72-A	UNA	CBM		
* P134116W	4/13/2001	48	72	36	SWSW	HI-PRO PRODUCTION L.L.C.** WY STATE BOARD OF LAND COMMISSIONERS	STATE 36-32-48-72-A	UNA	CBM		
* P134117W	4/13/2001	48	72	36	SWSE	HI-PRO PRODUCTION L.L.C.** WY STATE BOARD OF LAND COMMISSIONERS	STATE 36-34-48-72-A	GST	CBM		314
* P134117W	4/13/2001	48	72	36	SWSW	HI-PRO PRODUCTION L.L.C.** WY STATE BOARD OF LAND COMMISSIONERS	STATE 36-34-48-72-A	GST	CBM		314
P136823W	7/3/2001	48	72	36	SWNW	HI-PRO PRODUCTION L.L.C.	HIGH PLAINS 24-14	GST	CBM		412
P136826W	7/3/2001	48	72	36	SWNW	HI-PRO PRODUCTION L.L.C.	HIGH PLAINS 26-41	GST	CBM		416
* P136837W	7/3/2001	48	72	36	SWNW	HI-PRO PRODUCTION L.L.C.	DUNLAP 7-14-B	GST	CBM		1258
* P136839W	7/3/2001	48	72	36	SWNW	HI-PRO PRODUCTION L.L.C.	DUNLAP 7-23-B	GST	CBM		1192
P136840W	7/3/2001	48	72	36	SWNW	HI-PRO PRODUCTION L.L.C.	DUNLAP 7-24-B	GST	CBM		1124
P136842W	7/3/2001	48	72	36	SWNW	HI-PRO PRODUCTION L.L.C.	DUNLAP 18-11-B	GSI	CBM		
P136843W	7/3/2001	48	72	36	SWNW	HI-PRO PRODUCTION L.L.C.	DUNLAP 18-12-B	GST	CBM		1253
* P136844W	7/3/2001	48	72	36	SWNW	HI-PRO PRODUCTION L.L.C.	DUNLAP 18-21-B	GSI	CBM		
* P136845W	7/3/2001	48	72	36	SWNW	HI-PRO PRODUCTION L.L.C.	DUNLAP 18-22-B	GST	CBM		1230
P136846W	7/3/2001	48	72	36	SWNW	HI-PRO PRODUCTION L.L.C.	DUNLAP 24-34-B	GSI	CBM		
P136848W	7/3/2001	48	72	36	SWNW	HI-PRO PRODUCTION L.L.C.	HIGH PLAINS 25-11	GST	CBM		406
P136849W	7/3/2001	48	72	36	SWNW	HI-PRO PRODUCTION L.L.C.	HIGH PLAINS 13-23	GSI	CBM		
P136850W	7/3/2001	48	72	36	SWNW	HI-PRO PRODUCTION L.L.C.	HIGH PLAINS 13-24	GSI	CBM		
P136851W	7/3/2001	48	72	36	SWNW	HI-PRO PRODUCTION L.L.C.	HIGH PLAINS 23-44	GST	CBM		435
P136852W	7/3/2001	48	72	36	SWNW	HI-PRO PRODUCTION L.L.C.	HIGH PLAINS 23-34	GST	CBM		470
* P162471W	8/27/2004	48	72	36	NENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	36	NWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	36	SWNE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	36	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	36	NENW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	36	NWNW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	36	SWNW	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	36	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	36	SENE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	36	SESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
* P162471W	8/27/2004	48	72	36	SESE	WYDOT** WY STATE BOARD OF LAND COMMISSIONERS	GILLETTE YARD NO.1	GSI	MIS		
P60493W	5/3/1982	48	72	36	SWNW	WYOMING STATE HIGHWAY DEPARTMENT	CABALLO #3	PUW	MON	0	

GROUNDWATER RIGHTS FOR THE MAYSDORF LBA TRACT											
Permit	Priority	T	R	S	QQ	Applicant	Facility Name	Status	Uses	Yld	T.D.
P71739W	1/13/1986	48	72	36	SESW	WY BOARD OF LAND COMMISSIONERS**MARSHALL MORGAN	MORGAN #36	UNA	STO	25	103
P89534W	8/3/1992	48	72	36	SWNW	WY STATE BOARD OF LAND COMMISSIONERS** HI-PRO PRODUCTION L.L.C.	STATE #36-12	UNA	STO,CBM	20	337
* P89535W	8/3/1992	48	72	36	NWSW	WY STATE BOARD OF LAND COMMISSIONERS** HI-PRO PRODUCTION L.L.C.	STATE #36-13	UNA	STO,CBM	20	340
* P89535W	8/3/1992	48	72	36	SESW	WY STATE BOARD OF LAND COMMISSIONERS** HI-PRO PRODUCTION L.L.C.	STATE #36-13	UNA	STO,CBM	20	340
* P90619W	12/31/1992	48	72	36	SWNW	JM HUBER CORPORATION	THOMPSON #35-32	UNA	STO,CBM	20	435
* P90620W	12/31/1992	48	72	36	NWSE	HI-PRO PRODUCTION L.L.C.	STATE #36-33	UNA	STO,CBM	20	328
* P90620W	12/31/1992	48	72	36	SWNW	HI-PRO PRODUCTION L.L.C.	STATE #36-33	UNA	STO,CBM	20	328
* P90815W	1/19/1993	48	72	36	SWSW	WY STATE BOARD LAND COMMISSIONERS** HI-PRO PRODUCTION L.L.C.	STATE #36-14	UNA	STO,CBM	25	370
* P90815W	1/19/1993	48	72	36	SWNW	WY STATE BOARD LAND COMMISSIONERS** HI-PRO PRODUCTION L.L.C.	STATE #36-14	UNA	STO,CBM	25	370
P93190W	10/22/1993	48	72	36	NWSW	COMMISSIONER OF PUBLIC LANDS** WYO STATE ENGINEERS OFFICE	ECH-1A	UNA	MON	0	350

Table Notes for Non-Mining Ground Water Rights within Three Miles of the Maysdorf LBA Tract

Search Conducted March 8, 2005

Ground Water Right Search Area for the Maysdorf LBA Tract

Township	Range	Sections
46N	70W	5-8, 17-20, 30
46N	71W	1-30
46N	72W	1, 12, 13, 24
47N	70W	29-32
47N	71W	1-36
47N	72W	1-3, 10-15, 22, 23, 25, 26, 36
48N	71W	27-35
48N	72W	25, 26, 35, 36

Water rights were searched to the nearest quarter-quarter of each section listed above. Any part of a quarter-quarter that lies within three miles of the LBA tract is included.

Permit number suffixes are denoted as follows:

- "A" Adjudicated (finalized) rights; unless the right is a territorial appropriation, there will be a match in the reference column from one of the following permit types for the unadjudicated portion:
- "P" Stock and domestic use wells completed prior to May 24, 1969 and registered with the State Engineer's Office prior to December 31, 1972
- "W" Permits are for wells with a priority date for the date of filing with the State Engineer

Status Codes

- ADJ Adjudicated
- DSC Description
- EXP Expired
- GSE Good standing, permitted time limits have been extended
- GSI Good standing incomplete; required notices not received; not yet expired
- GST Good standing
- PU Point of use non irrigation (not actual status)
- PUW Location of well (not actual status)
- UNA Unadjudicated

Use Codes

- CBM Coal Bed Methane
- DEW Dewatering
- DOM Domestic
- DRI Drilling
- IND Industrial
- IRR Irrigation
- MIS Miscellaneous
- MON Monitoring
- RES Reservoir Supply
- STO Stock
- TEM Temporary Use

An asterisk (*) preceding the permit entry indicates a multiple entry for the same permit number, corresponding to multiple points of use for the permit.

SURFACE WATER RIGHTS FOR THE MAYSDORF LBA TRACT											
PERMIT	PRIORITY	T	R	S	QQ	APPLICANT	FACILITY NAME	STATUS	USES	SOURCE	
P26150D	5/11/1979	47	70	32	SWNW		PHOENIX WATER HAUL 32-3	PU	OIL,TEM,IND, MIS,DRI	BELLE FOURCHE RIVER	
P27172D	5/28/1981	46	71	15	SWNE	DAVIS OIL COMPANY	#1 ANGELA WATER HAUL	PU	OIL,TEM,IND, DRI	BELLE FOURCHE RIVER	
P27185D	6/12/1981	47	72	25	NENE	WARDLAW CONTRACT DRILLING INC.**WYO BOARD OF LAND COMMISSIONERS	WARDLAW WATER HAUL	PU	TEM,IND,DRI	BELLE FOURCHE RIVER	
P27185D	6/12/1981	47	72	25	NENW	WARDLAW CONTRACT DRILLING INC.**WYO BOARD OF LAND COMMISSIONERS	WARDLAW WATER HAUL	PU	TEM,IND,DRI	BELLE FOURCHE RIVER	
P27185D	6/12/1981	47	72	25	NESE	WARDLAW CONTRACT DRILLING INC.**WYO BOARD OF LAND COMMISSIONERS	WARDLAW WATER HAUL	PU	TEM,IND,DRI	BELLE FOURCHE RIVER	
P27185D	6/12/1981	47	72	25	NESW	WARDLAW CONTRACT DRILLING INC.**WYO BOARD OF LAND COMMISSIONERS	WARDLAW WATER HAUL	PU	TEM,IND,DRI	BELLE FOURCHE RIVER	
P27185D	6/12/1981	47	72	25	NWNE	WARDLAW CONTRACT DRILLING INC.**WYO BOARD OF LAND COMMISSIONERS	WARDLAW WATER HAUL	PU	TEM,IND,DRI	BELLE FOURCHE RIVER	
P27185D	6/12/1981	47	72	25	NWNW	WARDLAW CONTRACT DRILLING INC.**WYO BOARD OF LAND COMMISSIONERS	WARDLAW WATER HAUL	PU	TEM,IND,DRI	BELLE FOURCHE RIVER	
P27185D	6/12/1981	47	72	25	NWSE	WARDLAW CONTRACT DRILLING INC.**WYO BOARD OF LAND COMMISSIONERS	WARDLAW WATER HAUL	PU	TEM,IND,DRI	BELLE FOURCHE RIVER	
P27185D	6/12/1981	47	72	25	NWSW	WARDLAW CONTRACT DRILLING INC.**WYO BOARD OF LAND COMMISSIONERS	WARDLAW WATER HAUL	PU	TEM,IND,DRI	BELLE FOURCHE RIVER	
P27185D	6/12/1981	47	72	25	SENE	WARDLAW CONTRACT DRILLING INC.**WYO BOARD OF LAND COMMISSIONERS	WARDLAW WATER HAUL	PU	TEM,IND,DRI	BELLE FOURCHE RIVER	
P27185D	6/12/1981	47	72	25	SENE	WARDLAW CONTRACT DRILLING INC.**WYO BOARD OF LAND COMMISSIONERS	WARDLAW WATER HAUL	PU	TEM,IND,DRI	BELLE FOURCHE RIVER	
P27185D	6/12/1981	47	72	25	SESE	WARDLAW CONTRACT DRILLING INC.**WYO BOARD OF LAND COMMISSIONERS	WARDLAW WATER HAUL	PU	TEM,IND,DRI	BELLE FOURCHE RIVER	
P27185D	6/12/1981	47	72	25	SESW	WARDLAW CONTRACT DRILLING INC.**WYO BOARD OF LAND COMMISSIONERS	WARDLAW WATER HAUL	PU	TEM,IND,DRI	BELLE FOURCHE RIVER	
P27185D	6/12/1981	47	72	25	SWNE	WARDLAW CONTRACT DRILLING INC.**WYO BOARD OF LAND COMMISSIONERS	WARDLAW WATER HAUL	PU	TEM,IND,DRI	BELLE FOURCHE RIVER	
P27185D	6/12/1981	47	72	25	SWNW	WARDLAW CONTRACT DRILLING INC.**WYO BOARD OF LAND COMMISSIONERS	WARDLAW WATER HAUL	PU	TEM,IND,DRI	BELLE FOURCHE RIVER	
P27185D	6/12/1981	47	72	25	SWSE	WARDLAW CONTRACT DRILLING INC.**WYO BOARD OF LAND COMMISSIONERS	WARDLAW WATER HAUL	PU	TEM,IND,DRI	BELLE FOURCHE RIVER	
P27256D	8/3/1981	46	71	14	SWNE	DIAMOND SHAMROCK CORPORATION	KELLY FEDERAL 32-14 WATER USE	DSC	OIL,TEM,IND, DRI	BELLE FOURCHE RIVER	
P27256D	8/3/1981	46	71	14	SWNE	DIAMOND SHAMROCK CORPORATION	KELLY FEDERAL 32-14 WATER USE	PU	OIL,TEM,IND, DRI	BELLE FOURCHE RIVER	
P8605S	8/17/1979	46	71	21	SWSW	HEADLEY, JOSEPH & GRADY	HOADLY STOCK RESERVOIR	GST	STO	BUD DRAW	
P3293D	6/27/1901	48	72	35	SWSW	GEORGE A. KEELINE	KAVIO DITCH	PUD	IRR,DOM	CABALLO CREEK	
P5497R	4/5/1943	47	72	1	NENE	WYOMING GAME AND FISH	CABALLO RESERVOIR (CHANGED TO TEMPORARY NORTH PIT)	TRA	STO,FIS	CABALLO CREEK	
P5497R	4/5/1943	47	72	1	NWNE	WYOMING GAME AND FISH	CABALLO RESERVOIR (CHANGED TO TEMPORARY NORTH PIT)	TRA	STO,FIS	CABALLO CREEK	
P5497R	4/5/1943	47	71	6	NWNW	WYOMING GAME AND FISH	CABALLO RESERVOIR (CHANGED TO TEMPORARY	TRA	STO,FIS	CABALLO CREEK	

Appendix E

SURFACE WATER RIGHTS FOR THE MAYSDORF LBA TRACT										
PERMIT	PRIORITY	T	R	S	QQ	APPLICANT	FACILITY NAME	STATUS	USES	SOURCE
							NORTH PIT)			
P5497R	4/5/1943	48	71	31	NWSW	WYOMING GAME AND FISH	CABALLO RESERVOIR (CHANGED TO TEMPORARY NORTH PIT)	TRA	STO,FIS	CABALLO CREEK
P5497R	4/5/1943	48	71	31	SWSW	WYOMING GAME AND FISH	CABALLO RESERVOIR (CHANGED TO TEMPORARY NORTH PIT)	TRA	STO,FIS	CABALLO CREEK
P5497R	4/5/1943	48	71	33		WYOMING GAME AND FISH	CABALLO RESERVOIR (CHANGED TO TEMPORARY NORTH PIT)	TRA	STO,FIS	CABALLO CREEK
P5497R	4/5/1943	48	72	36	NESE	WYOMING GAME AND FISH	CABALLO RESERVOIR (CHANGED TO TEMPORARY NORTH PIT)	TRA	STO,FIS	CABALLO CREEK
P5497R	4/5/1943	48	72	36	SESE	WYOMING GAME AND FISH	CABALLO RESERVOIR (CHANGED TO TEMPORARY NORTH PIT)	TRA	STO,FIS	CABALLO CREEK
P5497R	4/5/1943	48	72	36	SWSE	WYOMING GAME AND FISH	CABALLO RESERVOIR (CHANGED TO TEMPORARY NORTH PIT)	TRA	STO,FIS	CABALLO CREEK
P1366S	1/26/1956	47	72	2	NENW	I.W. & WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 4 STOCK RESERVOIR	PU	STO	CABALLO CREEK
P1366S	1/26/1956	47	72	2	NENW	I.W. & WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 4 STOCK RESERVOIR	PUO	STO	CABALLO CREEK
P1366S	1/26/1956	47	72	2	NWNE	I.W. & WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 4 STOCK RESERVOIR	PU	STO	CABALLO CREEK
P1366S	1/26/1956	47	72	2	SENW	I.W. & WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 4 STOCK RESERVOIR	PU	STO	CABALLO CREEK
P1369S	1/26/1956	48	72	35	NESW	I.W. & WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 8 STOCK RESERVOIR	PU	STO	CABALLO CREEK
P1369S	1/26/1956	48	72	35	NWSW	I.W. & WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 8 STOCK RESERVOIR	PU	STO	CABALLO CREEK
P1365S	1/26/1956	48	72	35	SESW	I.W. & WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 3 STOCK RESERVOIR	PU	STO	CABALLO CREEK
P1365S	1/26/1956	48	72	35	SESW	I.W. & WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 3 STOCK RESERVOIR	PUO	STO	CABALLO CREEK
P1369S	1/26/1956	48	72	35	SESW	I.W. & WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 8 STOCK RESERVOIR	PU	STO	CABALLO CREEK
P1369S	1/26/1956	48	72	35	SESW	I.W. & WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 8 STOCK RESERVOIR	PUO	STO	CABALLO CREEK
P1363S	1/26/1956	48	72	35	SWSW	I.W. & WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 1 STOCK RESERVOIR	PU	STO	CABALLO CREEK
P1363S	1/26/1956	48	72	35	SWSW	I.W. & WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 1 STOCK RESERVOIR	PUO	STO	CABALLO CREEK
P1364S	1/26/1956	48	72	35	SWSW	I.W. & WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 2 STOCK RESERVOIR	PU	STO	CABALLO CREEK
P1364S	1/26/1956	48	72	35	SWSW	I.W. & WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 2 STOCK RESERVOIR	PUO	STO	CABALLO CREEK
P1365S	1/26/1956	48	72	35	SWSW	I.W. & WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 3 STOCK RESERVOIR	PU	STO	CABALLO CREEK

SURFACE WATER RIGHTS FOR THE MAYSDORF LBA TRACT											
PERMIT	PRIORITY	T	R	S	QQ	APPLICANT	FACILITY NAME	STATUS	USES	SOURCE	
P1369S	1/26/1956	48	72	35	SWSW	I. W. & WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 8 STOCK RESERVOIR	PU	STO	CABALLO CREEK	
CR10/458A	1/26/1956	47	72	2	NWNE	I. W. AND WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 4 STOCK RESERVOIR	PU	STO	CABALLO CREEK	
CR10/458A	1/26/1956	47	72	2	NENW	I. W. AND WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 4 STOCK RESERVOIR	PU	STO	CABALLO CREEK	
CR10/458A	1/26/1956	47	72	2	NENW	I. W. AND WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 4 STOCK RESERVOIR	PUO	STO	CABALLO CREEK	
CR10/458A	1/26/1956	47	72	2	SENW	I. W. AND WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 4 STOCK RESERVOIR	PU	STO	CABALLO CREEK	
CR10/461A	1/26/1956	48	72	35	NESW	I. W. AND WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 8 STOCK RESERVOIR	PU	STO	CABALLO CREEK	
CR10/461A	1/26/1956	48	72	35	NWSW	I. W. AND WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 8 STOCK RESERVOIR	PU	STO	CABALLO CREEK	
CR10/455A	1/26/1956	48	72	35	SWSW	I. W. AND WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 1 STOCK RESERVOIR	PU	STO	CABALLO CREEK	
CR10/455A	1/26/1956	48	72	35	SWSW	I. W. AND WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 1 STOCK RESERVOIR	PUO	STO	CABALLO CREEK	
CR10/456A	1/26/1956	48	72	35	SWSW	I. W. AND WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 2 STOCK RESERVOIR	PU	STO	CABALLO CREEK	
CR10/456A	1/26/1956	48	72	35	SWSW	I. W. AND WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 2 STOCK RESERVOIR	PUO	STO	CABALLO CREEK	
CR10/461A	1/26/1956	48	72	35	SWSW	I. W. AND WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 8 STOCK RESERVOIR	PU	STO	CABALLO CREEK	
CR10/457A	1/26/1956	48	72	35	SESW	I. W. AND WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 3 STOCK RESERVOIR	PUO	STO	CABALLO CREEK	
CR10/457A	1/26/1956	48	72	35	SESW	I. W. AND WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 3 STOCK RESERVOIR	PU	STO	CABALLO CREEK	
CR10/461A	1/26/1956	48	72	35	SESW	I. W. AND WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 8 STOCK RESERVOIR	PU	STO	CABALLO CREEK	
CR10/461A	1/26/1956	48	72	35	SESW	I. W. AND WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 8 STOCK RESERVOIR	PUO	STO	CABALLO CREEK	
CR10/457A	1/26/1956	48	72	35	NESE	I. W. AND WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 3 STOCK RESERVOIR	PU	STO	CABALLO CREEK	
P1371S	4/10/1956	48	72	35	NWSW	I. W. & WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 9 STOCK RESERVOIR	PU	STO	CABALLO CREEK	
P1371S	4/10/1956	48	72	35	NWSW	I. W. & WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 9 STOCK RESERVOIR	PUO	STO	CABALLO CREEK	
P1371S	4/10/1956	48	72	35	SWSW	I. W. & WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 9 STOCK RESERVOIR	PU	STO	CABALLO CREEK	
CR10/463A	4/10/1956	48	72	35	NWSW	I. W. AND WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 9 STOCK RESERVOIR	PU	STO	CABALLO CREEK	
CR10/463A	4/10/1956	48	72	35	NWSW	I. W. AND WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 9 STOCK RESERVOIR	PUO	STO	CABALLO CREEK	
CR10/463A	4/10/1956	48	72	35	SWSW	I. W. AND WINNIE E. LYNDE MEMORIAL TRUST	LYNDE NO. 9 STOCK RESERVOIR	PU	STO	CABALLO CREEK	
P25794D	6/8/1978	48	72	36	NENW	WYOMING STATE HIGHWAY DEPARTMENT	SMP 7665 WATER HAUL	PU	TEM,IND,MIS	CABALLO CREEK	
P25794D	6/8/1978	48	72	36	NWNW	WYOMING STATE HIGHWAY DEPARTMENT	SMP 7665 WATER HAUL	PU	TEM,IND,MIS	CABALLO CREEK	

Appendix E

SURFACE WATER RIGHTS FOR THE MAYSDORF LBA TRACT											
PERMIT	PRIORITY	T	R	S	QQ	APPLICANT	FACILITY NAME	STATUS	USES	SOURCE	
P25794D	6/8/1978	48	72	36	SWNW	WYOMING STATE HIGHWAY DEPARTMENT	SMP 7665 WATER HAUL	PU	TEM,IND,MIS	CABALLO CREEK	
CR3/347A	6/25/1962	47	71	3	NESW	LESLIE CLABAUGH	CLAYBAUGH STOCKWATER RESERVOIR	PU	STO	CLABAUGH DRAW	
CR3/347A	6/25/1962	47	71	3	NESW	LESLIE CLABAUGH	CLAYBAUGH STOCKWATER RESERVOIR	PUO	STO	CLABAUGH DRAW	
P20609D	2/23/1951	47	72	15	NESE	CLAUDE V. & MILO HAIGHT	HAIGHT DITCH	UNA	IRR	COAL CANYON CREEK	
P20609D	2/23/1951	47	72	15	NWSE	CLAUDE V. & MILO HAIGHT	HAIGHT DITCH	UNA	IRR	COAL CANYON CREEK	
P20609D	2/23/1951	47	72	15	SESE	CLAUDE V. & MILO HAIGHT	HAIGHT DITCH	UNA	IRR	COAL CANYON CREEK	
P20609D	2/23/1951	47	72	15	SWSE	CLAUDE V. & MILO HAIGHT	HAIGHT DITCH	UNA	IRR	COAL CANYON CREEK	
P20609D	2/23/1951	47	72	22	NENE	CLAUDE V. & MILO HAIGHT	HAIGHT DITCH	UNA	IRR	COAL CANYON CREEK	
P11759S	5/12/1993	47	72	10	NESE	I.W. & WINNIE E. LYNDE MEML TRST	HOE CREEK STOCK RESERVOIR	ADJ	STO	COAL CANYON CREEK	
P11759S	5/12/1993	47	72	11	NWSW	I.W. & WINNIE E. LYNDE MEML TRST	HOE CREEK STOCK RESERVOIR	ADJ	STO	COAL CANYON CREEK	
P11759S	5/12/1993	47	72	11	SWSW	I.W. & WINNIE E. LYNDE MEML TRST	HOE CREEK STOCK RESERVOIR	ADJ	STO	COAL CANYON CREEK	
P11759S	5/12/1993	47	72	12	NESE	I.W. & WINNIE E. LYNDE MEML TRST	HOE CREEK STOCK RESERVOIR	UNA	STO	COAL CANYON CREEK	
CR13/407A	5/12/1993	47	72	10	NESE	I. W. AND WINNIE E. LYNDE MEMORIAL TRUST	HOE CREEK STOCK RESERVOIR	ADJ	STO	COAL CANYON CREEK	
CR13/407A	5/12/1993	47	72	11	NWSW	I. W. AND WINNIE E. LYNDE MEMORIAL TRUST	HOE CREEK STOCK RESERVOIR	ADJ	STO	COAL CANYON CREEK	
CR13/407A	5/12/1993	47	72	11	SWSW	I. W. AND WINNIE E. LYNDE MEMORIAL TRUST	HOE CREEK STOCK RESERVOIR	ADJ	STO	COAL CANYON CREEK	
P8877S	7/10/1981	48	71	33	NWNW	MEADOWLARK FARMS INC.	CALAHAN STOCK RESERVOIR	PU	STO	DRAW NO. 2	
P8877S	7/10/1981	48	71	33	NWNW	MEADOWLARK FARMS INC.	CALAHAN STOCK RESERVOIR	PUO	STO	DRAW NO. 2	
P952R	11/30/1906	46	72	13	NENW	JOHN MORTON SHEEP COMPANY	LAKE VIEW RESERVOIR	PU	STO	DRY CREEK (9-46-71)	
P952R	11/30/1906	46	72	13	NENW	JOHN MORTON SHEEP COMPANY	LAKE VIEW RESERVOIR	PUO	STO	DRY CREEK (9-46-71)	
C26/326A	11/30/1906	46	72	13	NENW	JOHN MORTON SHEEP COMPANY	LAKE VIEW RESERVOIR	PU	STO	DRY CREEK (9-46-71)	
C26/326A	11/30/1906	46	72	13	NENW	JOHN MORTON SHEEP COMPANY	LAKE VIEW RESERVOIR	PUO	STO	DRY CREEK (9-46-71)	
P29669D	5/11/1987	46	72	13	SESW	M. R.A.	M.R.A. OSBORN #1-23 WATER HAUL	PUD	OIL,TEM,IND, DRI	DRY CREEK (9-46-71)	
P8878S	7/10/1981	48	71	32	NWNE	MEADOWLARK FARMS INC.	BELLE AYR NO. 6 STOCK RESERVOIR	PU	STO	DUCK NEST CREEK, DRY GULCH	
P8878S	7/10/1981	48	71	32	NWNE	MEADOWLARK FARMS INC.	BELLE AYR NO. 6 STOCK RESERVOIR	PUO	STO	DUCK NEST CREEK, DRY GULCH	
P12752D	9/17/1914	47	72	3	NENE	DELILAH J. MCDONALD	CAVYO DITCH	ADJ	IRR,DOM	FLAT CREEK	
P12752D	9/17/1914	48	72	35	NWSW	DELILAH J. MCDONALD	CAVYO DITCH	ADJ	IRR,DOM	FLAT CREEK	
P12752D	9/17/1914	48	72	35	SWSW	DELILAH J. MCDONALD	CAVYO DITCH	ADJ	IRR,DOM	FLAT CREEK	
C37/228A	9/17/1914	47	72	3	NENE	DELILAH J. MCDONALD	CAVYO DITCH	ADJ	IRR	FLAT CREEK	
C37/228A	9/17/1914	48	72	35	NWSW	DELILAH J. MCDONALD	CAVYO DITCH	ADJ	IRR	FLAT CREEK	
C37/228A	9/17/1914	48	72	35	SWSW	DELILAH J. MCDONALD	CAVYO DITCH	ADJ	IRR	FLAT CREEK	
P8771S	1/28/1981	48	71	27	NESW	RAG WYOMING LAND COMPANY INC.	UPPER GRALLAS GULCH STOCK RESERVOIR	GST	STO	GRALLAS GULCH	
P8771S	1/28/1981	48	71	27	NWSW	RAG WYOMING LAND COMPANY INC.	UPPER GRALLAS GULCH STOCK	GST	STO	GRALLAS GULCH	

SURFACE WATER RIGHTS FOR THE MAYSDORF LBA TRACT											
PERMIT	PRIORITY	T	R	S	QQ	APPLICANT	FACILITY NAME	STATUS	USES	SOURCE	
							RESERVOIR				
P8771S	1/28/1981	48	71	27	NWSW	RAG WYOMING LAND COMPANY INC.	UPPER GRALLAS GULCH STOCK RESERVOIR	GST	STO	GRALLAS GULCH	
P25953D	10/6/1978	46	71	5	NWNW	FLORIDA GAS EXPLORATION CO.	HAIGHT-GARRETT 1-5 WATER LINE	DSC	OIL,TEM,IND, DRI	HAIGHT DRAW	
P25953D	10/6/1978	46	71	5	NWNW	FLORIDA GAS EXPLORATION CO.	HAIGHT-GARRETT 1-5 WATER LINE	PU	OIL,TEM,IND, DRI	HAIGHT DRAW	
P25953D	10/6/1978	46	71	7		FLORIDA GAS EXPLORATION CO.	HAIGHT-GARRETT 1-5 WATER LINE	DSC	OIL,TEM,IND, DRI	HAIGHT DRAW	
P27838D	11/16/1982	46	72	12	NENE	AMOCO PRODUCTION COMPANY	PICKREL AMOCO NO. 1 WATER HAUL	PUD	OIL,TEM,IND, DRI	HAIGHT LAKE	
P27341D	10/9/1981	46	71	18	NESE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	18	NWNE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	18	NWSE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	18	SENE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	18	SESE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	18	SWNE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	18	SWSE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	19	NENE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	19	NESE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	19	NESW	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	19	NWNE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	19	NWSE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	19	NWSW	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	19	SENE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	19	SESE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	19	SESW	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	19	SWNE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	19	SWSE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	19	SWSW	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	20	NESE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	20	NESW	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	20	NWSE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	20	NWSW	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	20	SESE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	20	SESW	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	20	SWSE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	20	SWSW	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	72	24	NESE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	28	NENW	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	28	NWNW	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	28	SENE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	

Appendix E

SURFACE WATER RIGHTS FOR THE MAYSDORF LBA TRACT											
PERMIT	PRIORITY	T	R	S	QQ	APPLICANT	FACILITY NAME	STATUS	USES	SOURCE	
P27341D	10/9/1981	46	71	28	SWNW	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	29	NENE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	29	NENW	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	29	NESE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	29	NESW	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	29	NWNE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	29	NWNW	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	29	NWSE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	29	NWSW	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	29	SENE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	29	SENE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	29	SESE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	29	SESE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	29	SESW	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	29	SWNE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	29	SWNW	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	29	SWSE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	29	SWSW	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	30	NENE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	30	NENW	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	30	NWNE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	30	SENE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P27341D	10/9/1981	46	71	30	SWNE	INC. PETTY RAY GEOSOURCE	HAY CREEK NO. 1 WATER HAUL	PU	TEM,IND	HAY CREEK (30-46-71)	
P8604S	8/17/1979	46	71	22	NESW	JOSEPH & GRADY HOADLEY	DOCTOR JOE STOCK RESERVOIR	UNA	STO	HOADLEY DRAW	
P12638D	8/15/1914	47	72	11	NWNW	I.W. & WINNIE E. LYNDE	HOE NO. 5	ADJ	IRR	HOE CREEK	
P12638D	8/15/1914	47	72	11	SWNW	I.W. & WINNIE E. LYNDE	HOE NO. 5	ADJ	IRR	HOE CREEK	
P12638D	8/15/1914	47	72	11	SWNW	I.W. & WINNIE E. LYNDE	HOE NO. 5	PUD	IRR	HOE CREEK	
P12637D	8/15/1914	47	72	10	NESE	I.W. & WINNIE E. LYNDE MEMORIAL TRUST	HOE NO. 4	PUD	IRR	HOE CREEK	
P12637D	8/15/1914	47	72	10	NESE	I.W. & WINNIE E. LYNDE MEMORIAL TRUST	HOE NO. 4	ADJ	IRR	HOE CREEK	
P12636D	8/15/1914	47	72	10	NWSE	I.W. & WINNIE E. LYNDE MEMORIAL TRUST	HOE NO. 3	ADJ	IRR	HOE CREEK	
P12637D	8/15/1914	47	72	11	NWSW	I.W. & WINNIE E. LYNDE MEMORIAL TRUST	HOE NO. 4	ADJ	IRR	HOE CREEK	
C43/020A	8/15/1914	47	72	10	NESE	I. W. & WINNIE E. LYNDE	HOE NO. 4	ADJ	IRR	HOE CREEK	
C43/020A	8/15/1914	47	72	10	NESE	I. W. & WINNIE E. LYNDE	HOE NO. 4	PUD	IRR	HOE CREEK	
C43/019A	8/15/1914	47	72	10	NWSE	I. W. & WINNIE E. LYNDE	HOE NO. 3	ADJ	IRR	HOE CREEK	
C43/021A	8/15/1914	47	72	11	NWNW	I. W. & WINNIE E. LYNDE	HOE NO. 5	ADJ	IRR	HOE CREEK	
C43/021A	8/15/1914	47	72	11	SWNW	I. W. & WINNIE E. LYNDE	HOE NO. 5	ADJ	IRR	HOE CREEK	
C43/021A	8/15/1914	47	72	11	SWNW	I. W. & WINNIE E. LYNDE	HOE NO. 5	PUD	IRR	HOE CREEK	
C43/020A	8/15/1914	47	72	11	NWSW	I. W. & WINNIE E. LYNDE	HOE NO. 4	ADJ	IRR	HOE CREEK	
P7061S	9/20/1971	47	71	21	NESW	GLENN HAYDEN	JOHNSON STOCK RESERVOIR	PU	STO	JOHNSON DRAW	
P7061S	9/20/1971	47	71	21	NESW	GLENN HAYDEN	JOHNSON STOCK RESERVOIR	PUO	STO	JOHNSON DRAW	

SURFACE WATER RIGHTS FOR THE MAYSDORF LBA TRACT											
PERMIT	PRIORITY	T	R	S	QQ	APPLICANT	FACILITY NAME	STATUS	USES	SOURCE	
CR6/402A	9/20/1971	47	71	21	NESW	GLENN HAYDEN	JOHNSON STOCK RESERVOIR	PU	STO	JOHNSON DRAW	
CR6/402A	9/20/1971	47	71	21	NESW	GLENN HAYDEN	JOHNSON STOCK RESERVOIR	PUO	STO	JOHNSON DRAW	
P5236S	10/21/1963	46	71	23	NENW	A.G. HOADLEY ESTATE	MOUNT LOGAN STOCK RESERVOIR	UNA	STO	LOGAN CREEK	
P2663S	2/6/1959	46	71	28	NENE	A. G. HOADLEY	BUTTE STOCK RESERVOIR	PU	STO	NORTH BRANCH BUTTE DRAW	
P2663S	2/6/1959	46	71	28	NWNE	A. G. HOADLEY	BUTTE STOCK RESERVOIR	PUO	STO	NORTH BRANCH BUTTE DRAW	
P2663S	2/6/1959	46	71	28	NWNE	A. G. HOADLEY	BUTTE STOCK RESERVOIR	PU	STO	NORTH BRANCH BUTTE DRAW	
CR10/466A	7/30/1984	47	71	4	NESE	MOBIL MINERAL RESOURCES, INC.	PILLEY STOCK RESERVOIR	PU	STO	PETE DRAW	
CR10/466A	7/30/1984	47	71	4	NWSE	MOBIL MINERAL RESOURCES, INC.	PILLEY STOCK RESERVOIR	PUO	STO	PETE DRAW	
CR10/466A	7/30/1984	47	71	4	NWSE	MOBIL MINERAL RESOURCES, INC.	PILLEY STOCK RESERVOIR	PU	STO	PETE DRAW	
P7060S	9/20/1971	47	71	17	SWNE	GLENN HAYDEN	ROYAL STOCK RESERVOIR	PU	STO	ROYAL DRAW	
P7060S	9/20/1971	47	71	17	SWNE	GLENN HAYDEN	ROYAL STOCK RESERVOIR	PUO	STO	ROYAL DRAW	
P265S	6/15/1953	47	71	33	NENE	NICK STRAATSMA	BUTTE DRAW STOCK RESERVOIR	UNA	STO		
CR6/401A	9/20/1971	47	71	17	SWNE	GLENN HAYDEN	ROYAL STOCK RESERVOIR	PUO	STO		
CR6/401A	9/20/1971	47	71	17	SWNE	GLENN HAYDEN	ROYAL STOCK RESERVOIR	PU	STO		

Table Notes for Non-Mining Surface Water Rights within Three Miles of the Maysdorf LBA Tract

Search Conducted March 8, 2005

Surface Water Right Search Area for the Maysdorf LBA Tract

Township	Range	Sections
46N	70W	5-8, 17-20, 30
46N	71W	1-30
46N	72W	1, 12, 13, 24
47N	70W	29-32
47N	71W	1-36
47N	72W	1-3, 10-15, 22, 23, 25, 26, 36
48N	71W	27-35
48N	72W	25, 26, 35, 36

Water rights were searched to the nearest quarter-quarter of each section listed above. Any part of a quarter-quarter that lies within three miles of the LBA tract is included.

Record suffixes are denoted as follows:

- "A" Adjudicated (finalized) rights; unless the right is a territorial appropriation, there will be a match in the reference column from one of the following permit types for the unadjudicated portion:
- "D" Ditch or pipeline permit
- "R" Reservoir permit
- "S" Stock reservoir permit

Status Codes

- ABA Abandoned
- ADJ Adjudicated
- DSC Description
- EXP Expired
- GST Good standing
- PU Point of use non irrigation (not actual status)
- PUD Point of diversion (not actual status)
- PUO Point of reservoir outlet (not actual status)
- PUW Location of well (not actual status)
- TRA Transferred to another facility
- UNA Unadjudicated

Use Codes

- DOM Domestic
- DRI Drilling
- FIS Fish propagation
- IND Industrial
- IRR Irrigation
- MIS Miscellaneous
- OIL Oil refining/production
- STO Stock
- TEM Temporary use

APPENDIX F

**BIOLOGICAL ASSESSMENT
FOR THE MAYSDORF LBA TRACT EIS**

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F-1.0 INTRODUCTION

In 2001, Cordero Mining Company (CMC), operator of the Cordero Rojo Mine in Campbell County, Wyoming filed an application with the Bureau of Land Management (BLM) to lease the federal coal reserves included in a maintenance coal tract under the regulations at 43 CFR 3425, Leasing on Application. The environmental impacts of leasing this tract are being evaluated in the Maysdorf Coal Lease Application Environmental Impact Statement (EIS). The tract, referred to as the Maysdorf Lease by Application (LBA) Tract, and applicant mine are shown in Figures F-1 and F-2. The Cordero Rojo Mine is comprised of the Cordero Mining Company (CMC) Mine and the contiguous Caballo Rojo, Inc. (CRI) Mine. CMC is presently consolidating the Wyoming Department of Environmental Quality/Land Quality Division (WDEQ/LQD) mining permits for the CMC and CRI Mines into a single WDEQ/LQD mining permit for the Cordero Rojo Mine; the combined permit area will include approximately 16,804 acres.

The purpose of this Biological Assessment is to provide information about the potential effects that leasing the Maysdorf LBA Tract would have on federally listed threatened or endangered (T&E) species. T&E species are managed under the authority of the Endangered Species Act (ESA) of 1973 (PL 93-205, as amended). The ESA requires Federal agencies to ensure that all actions which they authorize, fund, or carry out are not likely to jeopardize the continued existence of any federally listed species or result in the destruction or adverse modification of their critical habitat. BLM does not authorize mining by issuing a lease for federal coal, but the impacts of mining the coal are considered at the leasing stage because it is a logical consequence of issuing a lease.

This Biological Assessment was prepared to disclose the possible effects to T&E species (plant and animal) that are known to be present or that may be present within the area influenced by the Proposed Action and the alternatives to the Proposed Action being evaluated by the BLM. It was prepared in accordance with Section 7 of the ESA.

Biological Assessment objectives are:

1. To comply with the requirements of the ESA that actions of federal agencies not jeopardize or adversely modify critical habitat of federally listed species.
2. To provide a process and standard by which to ensure that threatened or endangered species receive full consideration in the decision making process.

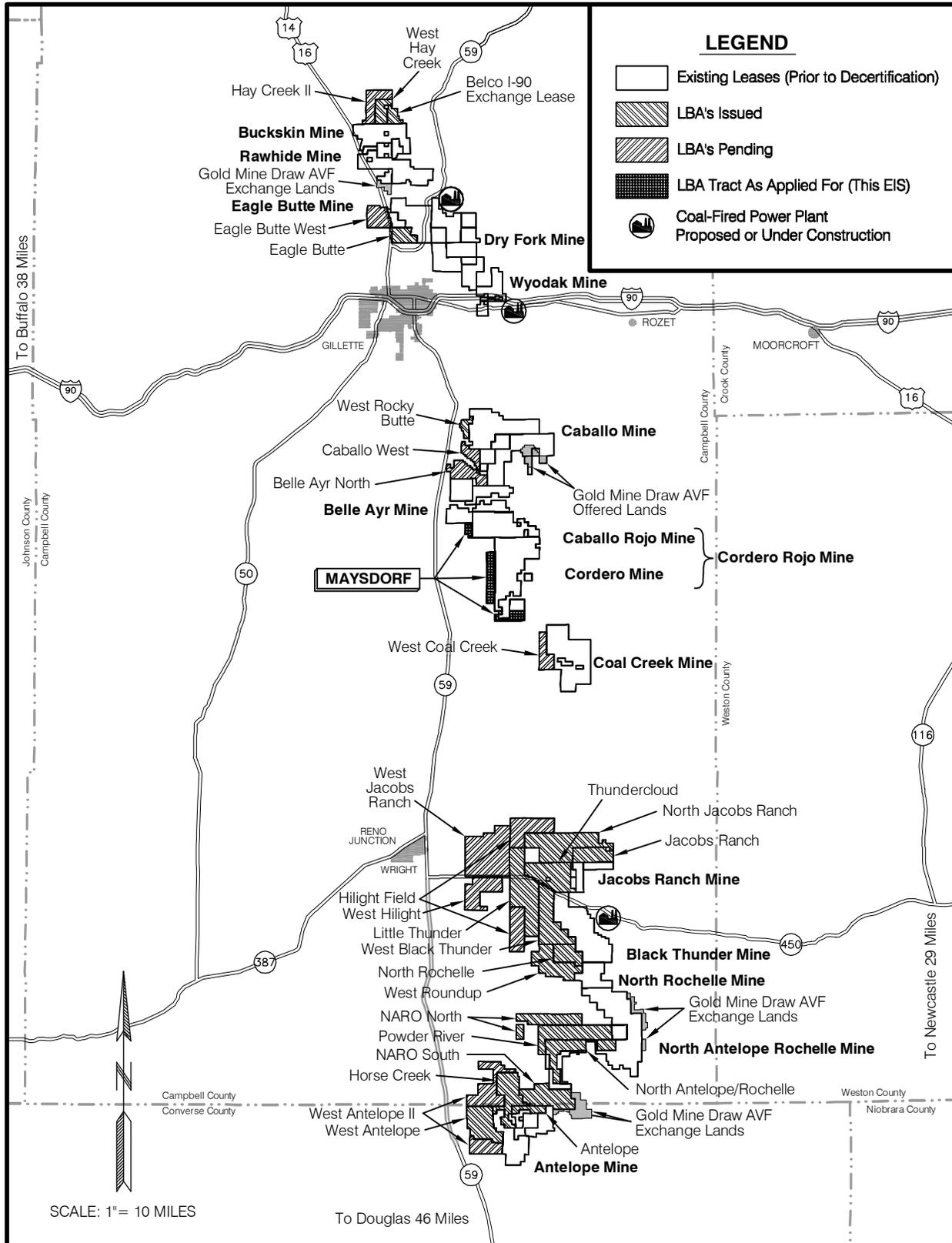


Figure F-1. General Location Map with Federal Coal Leases and LBA Tracts.

F-2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

F-2.1 The Proposed Action

On September 20, 2001, CMC filed an application with the BLM to lease federal coal reserves in a tract located west of and immediately adjacent to the Cordero Rojo Mine. Under the Proposed Action for the Maysdorf LBA Tract, the tract as applied for by CMC would be offered for lease at a sealed-bid, competitive lease sale. The boundaries of the tract would be consistent with the tract configuration proposed in the Maysdorf LBA Tract lease application (Figure F-2). The Proposed Action assumes that CMC will be the successful bidder on the Maysdorf LBA Tract if it is offered for lease.

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

T.46N., R.71W., 6th P.M., Campbell County, Wyoming

	<u>Acres</u>
Section 4: Lots 5, 6, 7(E $\frac{1}{2}$ E $\frac{1}{2}$), 10(E $\frac{1}{2}$ E $\frac{1}{2}$), 11, and 12;	185.05
Section 10: Lots 1, 2, 3(N $\frac{1}{2}$, N $\frac{1}{2}$ S $\frac{1}{2}$), 4(N $\frac{1}{2}$, N $\frac{1}{2}$ S $\frac{1}{2}$), 5(N $\frac{1}{2}$, N $\frac{1}{2}$ S $\frac{1}{2}$), and 6(N $\frac{1}{2}$, N $\frac{1}{2}$ S $\frac{1}{2}$);	203.32
Section 11: Lots 1 through 8, 9(N $\frac{1}{2}$, N $\frac{1}{2}$ S $\frac{1}{2}$), 10(N $\frac{1}{2}$, N $\frac{1}{2}$ S $\frac{1}{2}$), 11(N $\frac{1}{2}$, N $\frac{1}{2}$ S $\frac{1}{2}$), and 12(N $\frac{1}{2}$, N $\frac{1}{2}$ S $\frac{1}{2}$);	446.80

T.47N., R.71W., 6th P.M., Campbell County, Wyoming

	<u>Acres</u>
Section 8: Lots 3 through 6 and 11 through 13;	278.36
Section 21: Lots 1, 2, 3(E $\frac{1}{2}$ E $\frac{1}{2}$), 6(E $\frac{1}{2}$ E $\frac{1}{2}$), 7 through 10, 11(E $\frac{1}{2}$ E $\frac{1}{2}$), 14(E $\frac{1}{2}$ E $\frac{1}{2}$), 15, and 16;	364.77
Section 28: Lots 1, 2, 3(E $\frac{1}{2}$ E $\frac{1}{2}$), 6(E $\frac{1}{2}$ E $\frac{1}{2}$), 7 through 10, 11(E $\frac{1}{2}$ E $\frac{1}{2}$), 14(E $\frac{1}{2}$ E $\frac{1}{2}$), 15, and 16;	369.71
Section 33: Lots 1, 2, 3(E $\frac{1}{2}$ E $\frac{1}{2}$), 6(E $\frac{1}{2}$ E $\frac{1}{2}$), 7 through 10, 11(E $\frac{1}{2}$ E $\frac{1}{2}$), 14(E $\frac{1}{2}$ E $\frac{1}{2}$), 15, and 16;	371.38

Total Acreage: 2,219.39

The coal estate underlying this tract is owned by the federal government and administered by the BLM. The surface estate on this tract is privately and federally owned. The federal surface estate is administered by the BLM. Surface ownership is shown in Figure F-3.

The tract as applied for includes approximately 2,219.39 mineable acres. It is assumed that an area larger than the tract would have to be disturbed in order to recover all of the coal in the tract. The disturbances outside of the tract would be due to activities like overstripping, matching undisturbed topography, and construction of flood control and sediment control structures.

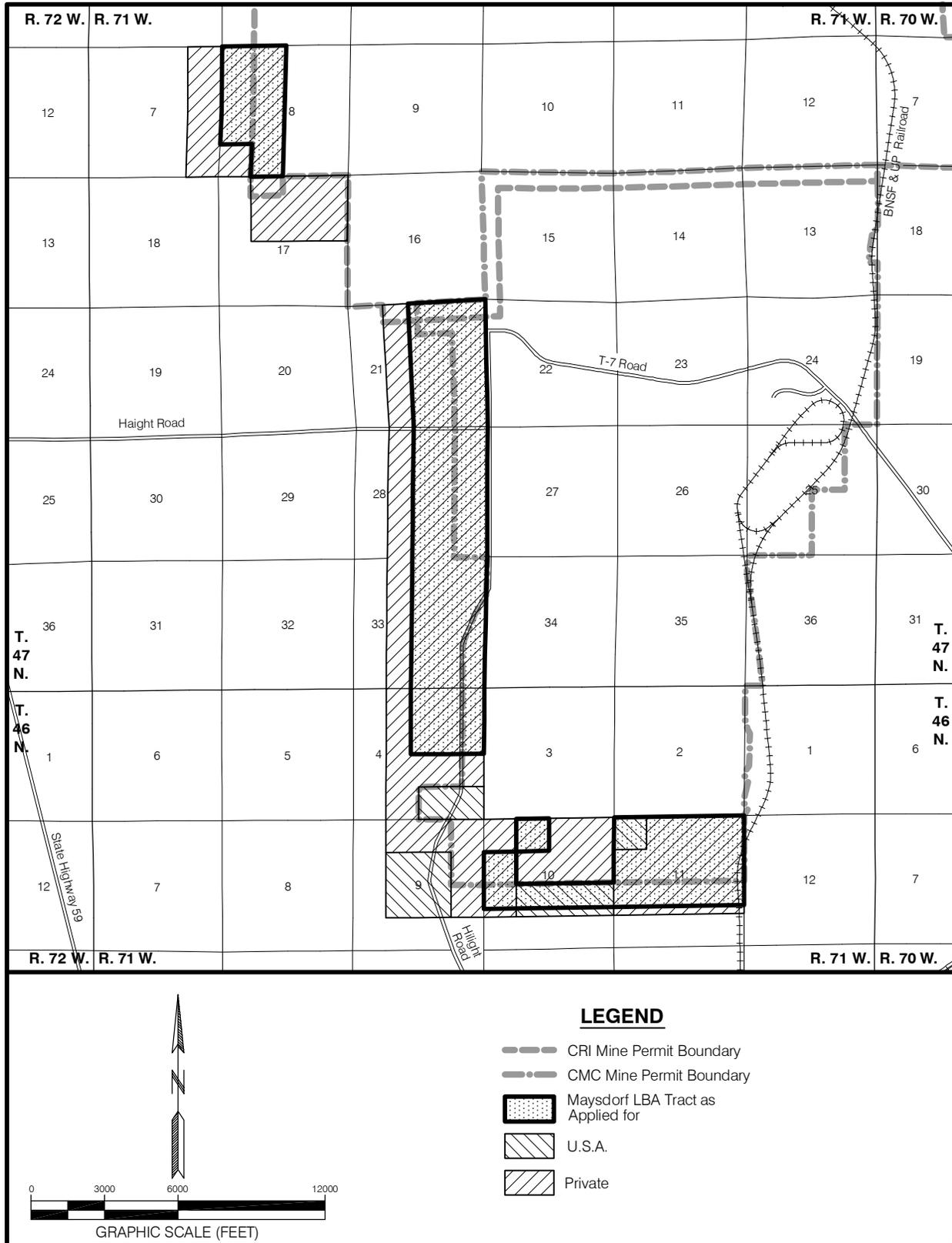


Figure F-3. Surface Ownership Within the Maysdorf LBA Tract.

Under the Proposed Action for the Maysdorf LBA Tract, if a decision is made to hold a competitive lease sale and if there is a successful bidder at that sale, a lease would be issued for the tract of federal coal as applied for. The tract offered for lease would be subject to standard and special lease stipulations developed for the Wyoming Powder River Basin (PRB). The stipulations that would be attached to a lease for the Maysdorf LBA Tract are listed in Appendix D of the Maysdorf Coal Lease Application EIS. The following stipulation relating to T&E species is one of the special stipulations developed for the Wyoming PRB:

THREATENED, ENDANGERED, CANDIDATE, or OTHER SPECIAL STATUS PLANT and ANIMAL SPECIES - *The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened or endangered under the Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 et seq., or that have other special status. The Authorized Officer may recommend modifications to exploration and development proposals to further conservation and management objectives or to avoid activity that will contribute to a need to list such species or their habitat or to comply with any biological opinion issued by the Fish and Wildlife Service for the Proposed Action. The Authorized Officer will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act. The Authorized Officer may require modifications to, or disapprove a proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species, or result in the destruction or adverse modification of designated or proposed critical habitat.*

The lessee shall comply with instructions from the Authorized Officer of the surface managing agency (BLM, if the surface is private) for ground disturbing activities associated with coal exploration on federal coal leases prior to approval of a mining and reclamation permit or outside an approved mining and reclamation permit area. The lessee shall comply with instructions from the Authorized Officer of the Office of Surface Mining Reclamation and Enforcement, or his designated representative, for all ground disturbing activities taking place within an approved mining and reclamation permit area or associated with such a permit.

The coal mining unsuitability criteria listed in the federal coal management regulations (43 CFR 3461) have been applied to high to moderate coal development potential lands in the Wyoming PRB (see Section F-3.0 for further discussion). As indicated in Chapter 1, Section 1.5 and Appendix B of the Maysdorf Coal Lease Application EIS, some of the above described lands in the Maysdorf LBA Tract are unsuitable for mining due to the presence of the Burlington Northern Santa Fe and Union Pacific (BNSF & UP) railroad right-of-way (ROW). Although the coal would not be recovered from these lands, they are included in the tract to allow maximum recovery of all the mineable coal outside of the railroad ROW and associated buffer zone and to comply with the

coal leasing regulations, which do not allow leasing of less than 10-acre aliquot parts. A stipulation stating that no mining activity may be conducted in the portion of the lease within the BNSF & UP railroad ROW will be attached if a lease is issued for this tract.

The Maysdorf tract includes an area where no coal is present due to erosion or non-deposition (a “no-coal” zone). It trends east-west throughout the central portion of Section 4, T.46N., R.71W. It is postulated (CMC 2004) that an ancient drainage channel (or paleochannel) eroded and removed the coal and replaced it with unconsolidated fine sand, occasional gravel, and silty clays. The “no-coal” zone is included in the tract to allow maximum recovery of all of the surrounding mineable coal.

Under the Proposed Action, it is assumed that the LBA tract would be developed as a maintenance lease to extend the life of the adjacent existing Cordero Rojo Mine. As a result, under the Proposed Action, the coal included in the tract would be mined by existing employees, using existing facilities and roads.

F-2.2 Alternatives to the Proposed Action

F-2.2.1 Alternative 1

Under Alternative 1, the No Action Alternative, the application to lease the federal coal included in the Maysdorf 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 Cordero Rojo Mine and would not preclude an application to lease the federal coal included in the Maysdorf LBA Tract in the future. Portions of the surface of the Maysdorf LBA Tract would be disturbed due to overstripping to allow coal to be removed from the adjacent existing leases.

F-2.2.2 Alternative 2

Under Alternative 2 for the Maysdorf LBA Tract, BLM would reconfigure the tract, hold a competitive coal sale for the lands included in the reconfigured tract, and issue a lease to the successful bidder. In evaluating the Maysdorf coal lease application, BLM identified a study area, shown in Figure F-2 as the “Area Added Under Alternative 2”, which includes unleased federal coal adjacent to the western and southern edges of the tract as applied for. BLM is evaluating the potential that an alternate configuration of the tract would provide for more efficient recovery of the federal coal, increase competitive interest in the tract, and/or reduce the potential that some of the remaining unleased federal coal in this area would be bypassed in the future. 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, as discussed above.

Alternative 2 for the Maysdorf LBA Tract assumes that CMC 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 Cordero Rojo Mine. Other assumptions are the same as for the Proposed Action. The lands that BLM is considering adding to the tract are:

T.46N., R.71W., 6th P.M., Campbell County, Wyoming

	<u>Acres</u>
Section 4: Lots 7(W ¹ / ₂ , W ¹ / ₂ E ¹ / ₂), 10(W ¹ / ₂ , W ¹ / ₂ E ¹ / ₂), 13 through 15, and 18 through 20;	305.99
Section 9: Lots 1 through 5;	204.50
Section 10: Lots 3(S ¹ / ₂ S ¹ / ₂), 4(S ¹ / ₂ S ¹ / ₂), 5(S ¹ / ₂ S ¹ / ₂), and 6(S ¹ / ₂ S ¹ / ₂);	40.66
Section 11: Lots 9(S ¹ / ₂ S ¹ / ₂), 10(S ¹ / ₂ S ¹ / ₂), 11(S ¹ / ₂ S ¹ / ₂), and 12(S ¹ / ₂ S ¹ / ₂);	40.48

T.47N., R.71W., 6th P.M., Campbell County, Wyoming

	<u>Acres</u>
Section 7: Lots 5, 12, 13, and 20;	167.53
Section 17: Lots 1 through 3, and 5 through 7;	241.27
Section 21: Lots 3(W ¹ / ₂ , W ¹ / ₂ E ¹ / ₂), 6(W ¹ / ₂ , W ¹ / ₂ E ¹ / ₂), 11(W ¹ / ₂ , W ¹ / ₂ E ¹ / ₂), and 14(W ¹ / ₂ , W ¹ / ₂ E ¹ / ₂);	119.62
Section 28: Lots 3(W ¹ / ₂ , W ¹ / ₂ E ¹ / ₂), 6(W ¹ / ₂ , W ¹ / ₂ E ¹ / ₂), 11(W ¹ / ₂ , W ¹ / ₂ E ¹ / ₂), and 14(W ¹ / ₂ , W ¹ / ₂ E ¹ / ₂);	124.16
Section 33: Lots 3(W ¹ / ₂ , W ¹ / ₂ E ¹ / ₂), 6(W ¹ / ₂ , W ¹ / ₂ E ¹ / ₂), 11(W ¹ / ₂ , W ¹ / ₂ E ¹ / ₂), and 14(W ¹ / ₂ , W ¹ / ₂ E ¹ / ₂);	123.80
Total Acreage:	<u>1,368.01</u>

CMC estimates that adding the above-described acreage to the tract would add approximately 138.6 million tons of in-place coal. The legal description of the Alternative 2 reconfiguration of the Maysdorf LBA Tract is as follows:

T.46N., R.71W., 6th P.M., Campbell County, Wyoming

	<u>Acres</u>
Section 4: Lots 5 through 7, 10 through 15, and 18 through 20;	491.04
Section 9: Lots 1 through 5;	204.50
Section 10: Lots 1 through 6;	243.98
Section 11: Lots 1 through 12;	487.28

T.47N., R.71W., 6th P.M., Campbell County, Wyoming

Section 7: Lots 5, 12, 13 and 20;	167.53
Section 8: Lots 3 through 6, and 11 through 13;	278.36
Section 17: Lots 1 through 3, and 5 through 7	241.27
Section 21: Lots 1 through 3, 6 through 11, and 14 through 16;	484.39
Section 28: Lots 1 through 3, 6 through 11, and 14 through 16;	493.87

Section 33: Lots 1 through 3, 6 through 11, and 14 through 16;	495.18
Total Acreage:	<u>3,587.40</u>

CMC estimates that the reconfigured tract includes approximately 373.4 million tons of in-place coal. After eliminating coal that lies within the BNSF & UP railroad ROW (and the adjacent buffer zone), which would not be mined as discussed above, and the no-coal zone, CMC estimates that the reconfigured tract includes approximately 365.3 million tons of mineable coal. Using CMC’s projected recovery factor of 94 percent, the reconfigured tract would contain about 343.4 million tons of recoverable coal.

F-2.2.3 Alternative 3

Under Alternative 3 for the Maysdorf LBA Tract, BLM is considering dividing the tract and offering two tracts for sale at separate, competitive sealed bid sales (Figure F-2). The two tracts would each be subject to standard and special lease stipulations developed for the PRB and for each tract if they are offered for sale, as discussed above. Alternative 3 for the Maysdorf LBA Tract assumes that CMC 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 Cordero Rojo Mine. Other assumptions would be the same as for the Maysdorf LBA Tract Proposed Action.

As shown in Figure F-2, the Maysdorf LBA Tract is comprised of three non-contiguous blocks of federal coal. Under Alternative 3, the North Maysdorf LBA Tract would consist of the northernmost block of coal and the South Maysdorf LBA Tract would consist of the two southern blocks of coal, as shown in Figure F-2. BLM is considering dividing the tract because the north tract would potentially be of competitive interest to more than one mine.

As discussed under Alternative 2, BLM has identified a study area, shown in Figure F-2 as the “Area Added Under Alternative 2”. Under Alternative 3, the BLM could add all, part, or none of the study area to the Maysdorf LBA Tract as applied for.

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

T.47N., R.71W., 6th P.M., Campbell County, Wyoming

	<u>Acres</u>
Section 7: Lots 5, 12, 13, and 20;	167.53
Section 8: Lots 3 through 6 and 11 through 13;	278.36
Section 17: Lots 1 through 3 and 5 through 7;	241.27
Total Acreage:	<u>687.16</u>

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

T.46N., R.71W., 6th P.M., Campbell County, Wyoming

	<u>Acres</u>
Section 4: Lots 5 through 7, 10 through 15, and 18 through 20;	491.04
Section 9: Lots 1 through 5;	204.50
Section 10: Lots 1 through 6;	243.98
Section 11: Lots 1 through 12;	487.28

T.47N., R.71W., 6th P.M., Campbell County, Wyoming

Section 21: Lots 1 through 3, 6 through 11, and 14 through 16;	484.39
Section 28: Lots 1 through 3, 6 through 11, and 14 through 16;	493.87
Section 33: Lots 1 through 3, 6 through 11, and 14 through 16;	495.18

Total Acreage: 2,900.24

Under the Alternative 3 reconfiguration of the Maysdorf LBA Tract, the north tract would include approximately 687.16 acres containing approximately 80.2 million tons of in-place coal and the south tract would include 2,900.24 acres containing approximately 293.2 million tons of in-place coal, according to information provided by the applicant. The south tract includes the area that would not be mined within the BNSF & UP railroad ROW (and the adjacent buffer zone) and the no-coal zone, as discussed above.

F-3.0 CONSULTATION TO DATE

The locations of the existing Cordero Rojo Mine coal leases, the existing approved mine permit area, and the Maysdorf LBA Tract are shown in Figure F-2.

The Cordero Rojo Mine and Maysdorf LBA Tract are included in the area determined to be “acceptable for further consideration for leasing” as part of the coal screening process. The coal screening process is a four part process that includes application of the coal unsuitability criteria, which are defined in 43 CFR 3461.5. BLM has applied these coal screens to federal coal lands in Campbell County several times, starting in the early 1980s. Most recently, in 1993, BLM began the process of reapplying these screens to federal coal lands in Campbell, Converse, and Sheridan Counties. The results of this analysis were included as Appendix D of the 2001 *Approved Resource Management Plan for Public Lands Administered by the BLM Buffalo Field Office* (BLM 2001), which can be viewed on the Wyoming BLM website at <http://www.wy.blm.gov> in the NEPA documents section. Consultation with the U.S. Fish and Wildlife Service (USFWS) occurred in conjunction with the unsuitability findings under Criterion 9 (Critical Habitat for Threatened or Endangered Plant and Animal Species), Criterion 11 (Bald or Golden Eagle

Nests), Criterion 12 (Bald and Golden Eagle Roost and Concentration Areas), Criterion 13 (Falcon Nesting Site(s) and Buffer Zone(s)), and Criterion 14 (Habitat for Migratory Bird Species).

Appendix B of the Maysdorf Coal Lease Application EIS summarizes the unsuitability criteria, describes the general findings for the screening analyses discussed above, and presents a validation of these findings for the Maysdorf LBA Tract based on the current information.

Consultation with USFWS has previously been completed for the area included within the Cordero Rojo Mine's existing approved mining permit area, shown in Figure F-2, as part of the mining and reclamation plan approval process. This process began when the CMC Mine and the CRI Mine were initially permitted in 1975 and 1980, respectively.

A letter dated February 11, 2002, from Michael Long, USFWS, Cheyenne, Wyoming to Debbie Messenheimer, Kennecott Energy, Gillette, Wyoming, documented approval of the current updated Raptor and Migratory Birds of High Federal Interest (MBHFI) Monitoring and Mitigation Plan for the CRI Mine.

A letter dated March 18, 2005, from Brian Kelly, USFWS, Cheyenne, Wyoming, to Jim Orpet of Intermountain Resources (wildlife consultant for the Cordero Rojo Mine) approved CMC's current Migratory Birds of High Federal Interest and Raptor Monitoring and Mitigation Plan.

USFWS provided scoping comments, including a list of the T&E species that may be present in the Maysdorf coal lease project area, to the BLM in a memorandum from Brian T. Kelly, USFWS, Wyoming Field Office, Cheyenne, Wyoming, to James Murkin, BLM, Casper Field Office, Casper, Wyoming dated February 15, 2005 (USFWS 2005). The following list of species that was provided by USFWS represents the federally listed T&E species that may be present in Campbell County, Wyoming:

Bald eagle (*Haliaeetus leucocephalus*): Threatened

Black-footed ferret (*Mustela nigripes*): Endangered

Ute ladies'-tresses (*Spiranthes diluvialis*): Threatened

The February 15, 2005 memorandum provided recommendations for protective measures for T&E species in accordance with the ESA. Protective measures for migratory birds in accordance with the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) and recommendations for the protection of wetlands (under Executive Order 11990 and Section 404 of the Clean Water Act) and for other fish and wildlife resources (under the Fish and Wildlife Coordination Act and the Fish and Wildlife Act of 1956) were also included. The memorandum identified the greater sage-grouse as a species of

specific interest and the importance of identifying grouse habitats within the lease area and appropriate mitigation measures to minimize potential impacts to this species.

The Wyoming Game and Fish Department (WGFD) provided BLM with scoping comments for the CMC Maysdorf tract coal lease application in two letters from Bill Wichers, Deputy Director, WGFD, Cheyenne, Wyoming, to Nancy Doelger, BLM, Casper Field Office, Casper, Wyoming, dated March 31 and July 19, 2005 (WGFD 2005a and 2005b). WGFD recommended consideration be given to possible impacts to big game, sage grouse and their habitat, and aquatic resources of the Belle Fourche River, particularly the black bullhead, which is categorized by the state as a Status 3 species.

F-4.0 SPECIES HABITAT AND OCCURRENCE AND EFFECTS OF THE PROPOSED PROJECT

The CMC Mine began producing coal in 1976 and the CRI Mine began producing coal in 1983. Wildlife monitoring has been conducted annually for the two mines since the early 1980s. This wildlife monitoring was designed to meet the WDEQ/LQD, WGFD, and federal requirements for annual monitoring and reporting of wildlife activity on coal mining areas. Detailed procedures and site-specific requirements have been carried out as approved by WGFD and USFWS. The monitoring programs were conducted in accordance with Appendix B of WDEQ/LQD Coal Rules and Regulations. Because the areas covered in the wildlife surveys included the mines' permit areas and a large perimeter around the mines' permit boundaries, the entire Maysdorf LBA Tract has been included in baseline inventories and annual wildlife surveys conducted for the CMC and CRI Mines since wildlife surveys began.

Both the approved CMC Mine Permit 237 Term T7 (CMC 2004) and CRI Mine Permit 511 Term T6 (CRI 2002) include monitoring and mitigation measures for the Cordero Rojo Mine that are required by SMCRA and Wyoming State Law. CMC is presently working with the WDEQ/LQD to consolidate the CMC and CRI mining permits into a single mining permit for the Cordero Rojo Mine. CMC expects formal approval of the permit consolidation in 2006. If the Maysdorf LBA Tract is acquired by CMC, these monitoring and mitigation measures would be extended to cover operations on the LBA tract when the Cordero Rojo Mine's 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 the Alternatives 2 and 3 during the leasing process because they are regulatory requirements.

Background information on T&E species in the vicinity of the Maysdorf LBA Tract was drawn from several sources, including: wildlife survey reports submitted by CMC and CRI to the WDEQ/LQD from the 1970s through 2005, the Final South Powder River Basin Coal EIS (BLM 2003), a Wyoming Natural

Diversity Database search (University of Wyoming 2001), and from WGF and USFWS records and contacts in 2005.

Site-specific data for a substantial portion of the tract as applied for and the study area for Alternatives 2 and 3 were obtained from several sources, including WDEQ/LQD permit applications and annual wildlife reports for the CMC and CRI Mines and other nearby coal mines. Baseline wildlife studies were conducted by Intermountain Resources (IR) expressly for the Maysdorf LBA Tract beginning in February of 2005 and continuing through December of 2005. Figure F-4 depicts T&E animal species survey areas for the Cordero Rojo Mine and Maysdorf LBA Tract.

The topography within the vicinity of the LBA tract is mainly gently rolling and of moderate relief influenced by the Belle Fourche River. Elevation ranges from approximately 4,510 to 4,770 feet above sea level.

Predominant habitat types within the LBA tract and adjacent area consist primarily of sagebrush-grassland, with areas of sandy-grassland. Rough breaks and streamside bottomland areas occur primarily in the southern portion. Various relatively small parcels of crested wheatgrass pasture occur throughout the area and networks of road and well-pad disturbance areas overlay much of the sagebrush-grassland and sandy-grassland areas. There are also numerous tank batteries and miles of pipeline disturbance with varying degrees of recovering vegetation cover.

The Belle Fourche River passes through the southern part of the Maysdorf LBA Tract. All streams, including the Belle Fourche River, within and adjacent to the LBA tract are ephemeral. In response to surface discharge of groundwater associated with coal bed natural gas (CBNG) production upstream of the LBA tract, which is a relatively recent phenomenon, streamflow occurrence in the river is now more persistent. The Belle Fourche River and the distinctive shallow pools that are present along its natural course in the general analysis area are now seldom completely dry, resulting in an increase in habitat for waterfowl, shorebirds, and aquatic species. Six reservoirs used for livestock water are located in the tract, all of which are in T.47N., R.71W. Two areas on the tract do not drain toward any stream: a roughly 30-acre playa formed by a natural topographic depression exists in the northern portion of Section 4, T.46N., R.71W., and roughly a 40-acre playa formed by a natural topographic depression exists in the west-central portion of Section 21, T.47N., R.71W.

CMC's approved mining plan currently allows disturbance of the Belle Fourche River channel. The Belle Fourche River flows roughly east-northeast through the southern portion of the LBA tract and is currently diverted from its natural channel in this area to facilitate mining within the existing Cordero Rojo Mine permit area. The diversion channel was constructed in 1995. The diversion begins within the LBA tract area, near and parallel to the northern edge of Section 11, T.46N., R.71W., then extends to the north-northeast into the

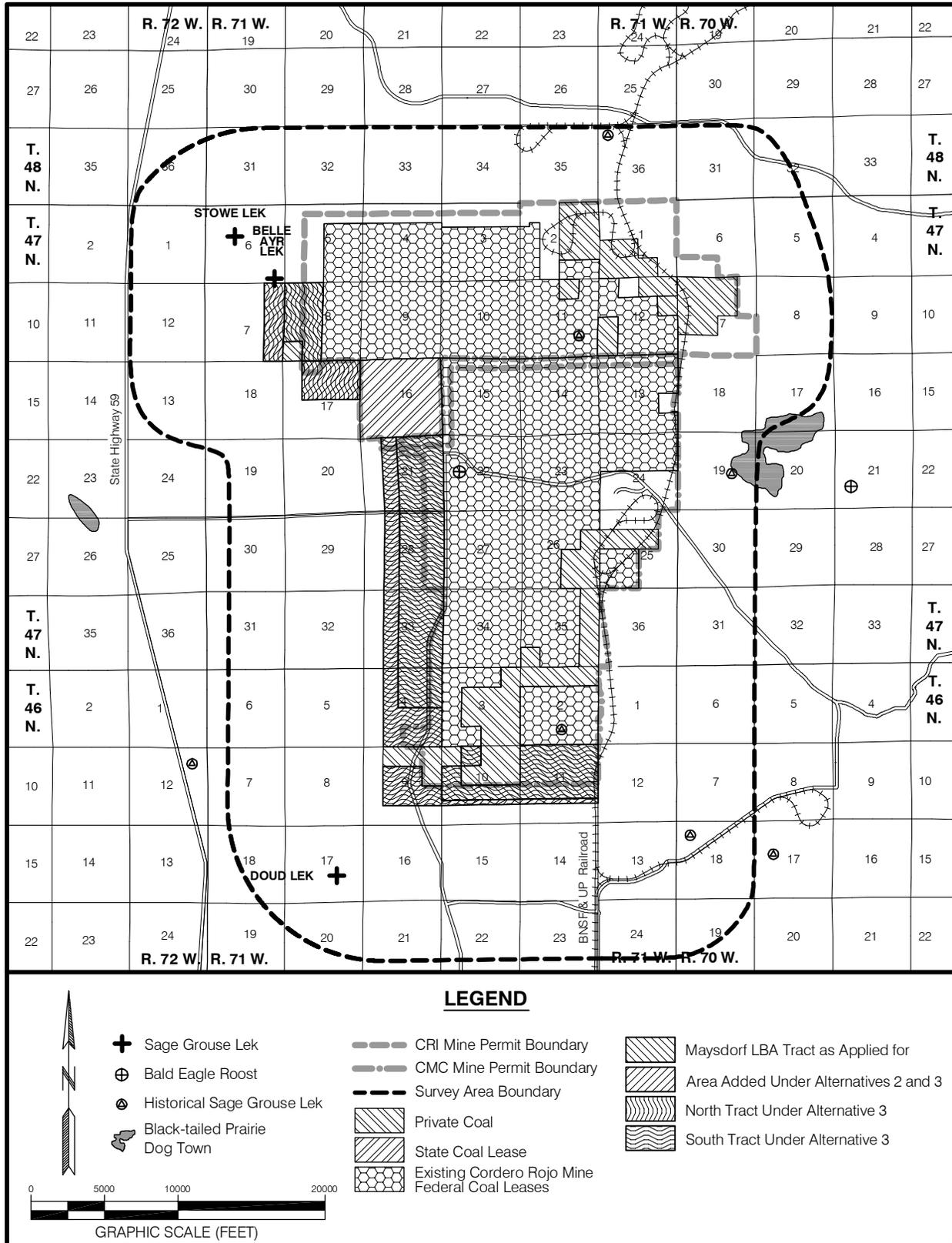


Figure F-4. T&E Animal Species Survey Area for the Cordero Rojo Mine and Maysdorf LBA Tract.

mine's existing permit area, across most of Section 2, T.46N., R.71W., where it rejoins the natural channel. Another channel diversion was constructed in 1977 in Sections 25 and 26, T.47N., R.71W., as part of the mine's railroad spur and loop construction. CMC would propose another diversion of the Belle Fourche River if they acquire a lease for the Maysdorf LBA Tract.

Wetland inventories, based on USFWS NWI mapping and vegetation mapping in the field, were completed in 2005 within a 5,590.65-acre area by CMC. The wetland analysis area includes the Maysdorf LBA Tract as applied for, the lands added under Alternatives 2 and 3, and a ¼-mile disturbance buffer around the tract sufficient to mine and reclaim the tract as a part of the existing Cordero Rojo Mine operation. A formal wetland delineation has been confirmed by the U.S. Army Corps of Engineers (COE) for the portion of the wetland analysis area (1,245.96 acres) that is within the current Cordero Rojo Mine permit area. The wetland inventory for the remainder of the area would be submitted to COE for verification as part of the mining and reclamation permit process, if the tract is leased.

Within the entire wetland analysis area, a total of 154.2 acres of Waters of the U.S. have been identified, including a total of 33.2 acres of jurisdictional waters of the U.S. Approximately 30.0 of those acres are jurisdictional wetlands. Identified jurisdictional wetlands occur immediately along the banks of the Belle Fourche River channel and at intermittent locations in upland swale drainages adjacent to the river. The 3.2 acres of jurisdictional other Waters of the U.S. that did not qualify as jurisdictional wetlands consist primarily of the open water of the Belle Fourche River.

Wetland areas previously mapped by the USFWS NWI project have been recently altered somewhat due to CBNG-related water production within and upstream of the Maysdorf tract wetland analysis area. There are an additional 121.0 acres of non-jurisdictional Waters of the U.S. also contained in the wetland analysis area that includes a large flooded playa, stockponds, depressions, and several ephemeral riverine systems that are isolated. The non-jurisdictional wetlands (78.4 acres) are associated with stockponds, depressions, and ephemeral riverine drainages that are isolated. The non-jurisdictional other Waters of the U.S. (42.6 acres) occur as an area of open water in Section 21, T.47N., R.71W., where water produced from nearby CBNG development wells is regularly discharged, which has resulted in year-round ponding in a depression/playa area.

Within the proposed lease area and adjacent study area there is no "critical" habitat designated by USFWS for T&E species. The following discussion describes species' habitat requirements and their occurrence in the area of the Maysdorf LBA Tract and evaluates the potential environmental effects of the Proposed Action and Alternatives 2 and 3 on federally listed species.

F-4.1 Threatened Species

F-4.1.1 Bald eagle (*Haliaeetus leucocephalus*)

On February 14, 1978, the bald eagle was listed as endangered in all of the coterminous United States except Minnesota, Wisconsin, Michigan, Oregon, and Washington, where it was classified as threatened (43 F.R. 6233). The USFWS reclassified the bald eagle from endangered to threatened throughout its range in the lower 48 states on July 12, 1995 (60 F.R. 36000). The bald eagle was proposed for delisting on July 6, 1999 (64 F.R. 36454). Currently, the proposal has not been finalized or withdrawn.

Biology and Habitat Requirements: Adult bald eagles establish life-long pair bonds and nest primarily in remote areas free of disturbance, in large trees that are near rivers, lakes, marshes, or other wetland areas. In Wyoming, this species builds large nests in the crowns of large mature trees such as cottonwoods or pines. Typically, there are alternate nests within or in close proximity to the nest stand. Snags and open-canopied trees near the nest site and foraging areas provide favorable perch sites. This species is a common breeding resident in some areas of Wyoming. Bald eagles utilize mixed coniferous and mature cottonwood-riparian areas near large lakes or rivers as nesting habitat (Luce et al. 1999 and USFWS 2005).

Food availability is probably the single most important determining factor for bald eagle distribution and abundance (Steenhof 1976). Fish and waterfowl are the primary sources of food. Big game and livestock carrion, including domestic sheep carcasses, as well as rodents (e.g., ground squirrels, prairie dogs, etc.) also can be important dietary components where these resources are available (Ehrlich et al. 1988). Bald eagles are opportunistic foragers. They prefer to forage in areas with the least human disturbance (USFWS 1978, McGarigal et al. 1991).

Bald eagles that have open water or alternate food sources near their nesting territories may stay for the winter; other eagles migrate southward to areas with available prey. During migration and in winter, eagles often concentrate on locally abundant food resources and tend to roost communally at night. Communal roosts (defined as six or more eagles on any give night) usually are located in large mature trees, usually in secluded locations that offer protection from harsh weather. Large, live trees in sheltered areas provide a favorable thermal environment and help minimize the energy stress encountered by wintering eagles. Communal roosting also may facilitate food finding (Steenhof 1976) and pair bonding. Bald eagles often return to use the same nest and winter roost year after year (USFWS 2005). Freedom from human disturbance is also important in communal roost site selection (Steenhof et al. 1980, U.S. Bureau of Reclamation 1981, USFWS 1986, Buehler et al. 1991). Continued human disturbance of a night roost may cause eagles to abandon an area (Hansen et al. 1981, Keister 1981). The proximity of night roosts to the other

habitats required by wintering eagles, such as hunting perches and feeding sites, is important (Steenhof et al. 1980). Roosts may be several miles from feeding sites. The absence of a suitable roost may limit the use of otherwise suitable habitat.

Existing Environment: Bald eagles are relatively common winter residents and migrants in northeastern Wyoming's PRB. Minimal suitable roosting habitat is present within the current Cordero Rojo Mine permit area and the Maysdorf LBA Tract. There are no trees on the tract. No known nest sites, or consistent yearly concentrated prey or carrion sources for bald eagles are present in the area of the Cordero Rojo Mine, including the Maysdorf LBA Tract and adjacent study area. However, this species is commonly observed in the general vicinity of the Maysdorf LBA Tract in the winter. A sheep ranching operation is located adjacent to the mine's western permit boundary on the north side of Haight Road (Figure F-3). Eagles may prey upon adult sheep carcasses in this area in the winter, although that source of food would not be consistent or abundant, and wintering migrant eagles have typically left the area prior to spring lambing season. The nearest known historical communal bald eagle roost is over five miles to the east of the LBA tract (NW $\frac{1}{4}$ of Section 21, T.47N., R.70W.). More than 25 bald eagles were counted in this roost area on February 16 of 2005. Several isolated bald eagle nesting attempts have been recorded in the region, but all known attempts have been over 20 miles away from the Maysdorf LBA Tract.

In the winters of 2004-2005 and 2005-2006, the bald eagle was far more common and abundant in the area than in previous years. This may have been a result of mild winter conditions and the abundance of lagomorphs (rabbits) to prey upon. Bald eagles also scavenged road-killed rabbits off of adjacent roads. Lagomorph numbers appeared to be at or near a peak in their cycle. In the winters of 2004-2005 and 2005-2006, bald eagles frequently used a large windbreak within the existing Cordero Rojo Mine permit area in the NW $\frac{1}{4}$ of Section 22, T.47N., R.71W. Bald eagles had never been observed concentrating in this windbreak during the previous 25+ years of wildlife surveys. A maximum of 29 bald eagles were observed at this roost site on February 16 of 2005. This roost site is within $\frac{1}{4}$ mile of active mining operations and bald eagles were commonly observed around mining activities. Bald eagle roosts or concentration areas were not observed on the Maysdorf LBA Tract during the winters of 2004-2005 and 2005-2006 or during prior wildlife monitoring surveys. No other consistently used areas with fewer than six eagles have been identified on or near the LBA tract.

Effects of the Proposed Project: Mining the federal coal lease included in the Maysdorf LBA Tract, if the tract is leased under the Proposed Action or Alternatives 2 and 3, may affect, but is not likely to adversely affect bald eagles. If the federal coal in the Maysdorf LBA Tract is leased under the Proposed Action or Alternatives 2 or 3, there would be an expansion of human disturbance onto the tract when it is mined that could impact wintering bald

eagles in the area. Bald eagles wintering in the area have been observed roosting near active mine operations and frequenting active mining areas at the Cordero Rojo Mine. Disturbance to nesting eagles can cause nest failure, nest abandonment, and unsuccessful fledging of young; however, no bald eagle nests are known to exist in the area. Bald eagle foraging habitat would be lost on the tract during mining and before final reclamation; however, the Cordero Rojo Mine and Maysdorf LBA Tract areas do not provide any consistent, reliable or concentrated food sources for eagles. The loss of any potential foraging habitat would be short-term. Foraging habitat that is lost during mining would be replaced as reclamation continues on already mined out areas. Eagles may alter foraging patterns as they fly around areas of active mining activity. The potential for bald eagles to collide with or be electrocuted by electric power lines on the mine site would be minimal due to use of raptor-safe power lines, which is required under SMCRA (30 CFR 816.97). Use of roads accessing Cordero Rojo Mine by mine-related traffic would continue when the Maysdorf LBA Tract is mined, which may perpetuate vehicular-wildlife collisions and the presence of roadside carcasses. This could result in bald eagle foraging along roads in this area, which perpetuates the potential for road kills of foraging bald eagles to occur.

Cumulative Effects: Mineral development, including CBNG development, conventional oil and gas development, and surface coal mining, is a leading cause of habitat loss within the PRB. Extensive CBNG development has occurred in and adjacent to this area. Surface coal mining has been ongoing at the Cordero Rojo Mine for almost 30 years.

F-4.1.2 Ute ladies'-tresses orchid (*Spiranthes diluvialis*)

Ute ladies'-tresses, a member of the orchid family, was listed as threatened on January 17, 1992 due to a variety of factors, including habitat loss and modification, hydrological modifications of existing and potential habitat areas, and invasion of exotic plant species. At the time of listing, Ute ladies'-tresses was only known from Colorado, Utah, and extreme eastern Nevada. Ute ladies'-tresses orchids were discovered in Idaho in September 1996. It is currently known from western Nebraska, eastern Wyoming, north-central Colorado, northeastern and southern Utah, east-central and southeastern Idaho, southwestern Montana, and central Washington.

Biology and Habitat Requirements: Ute ladies'-tresses is a perennial, terrestrial orchid with erect, glandular-pubescent stems 8 to 20 inches tall arising from tuberous-thickened roots. This species typically flowers from late July through August. The flowers are white or ivory and clustered into a spike at the top of the stem; however, depending on location and climatic conditions, it may bloom in early July or still be in flower as late as early October (USFWS 2005). Plants probably do not flower every year and may remain dormant below ground during drought years. The total known population of this species

is currently estimated to be 60,000 individuals (USFWS 2004). Occurrences range in size from one plant to a few hundred individuals.

Ute ladies'-tresses occurs primarily on moist, subirrigated or seasonally flooded soils bordering wetland meadows, springs, lakes, or perennial streams. The elevation range of known occurrences is 4,200 to 7,000 feet in alluvial substrates along riparian edges, gravel bars, old oxbows, and moist to wet meadows. Soils where the orchid has been found typically range from fine silt/sand to gravels and cobbles, as well as to highly organic and peaty soil types. The Ute ladies'-tresses orchid is not found in heavy or tight clay soils or in extremely saline or alkaline soils. The orchid seems intolerant of shade and small scattered groups are found primarily in areas where vegetation is relatively open (USFWS 2005). Ute ladies'-tresses orchid is commonly associated with horsetail, milkweed, verbena, blue-eyed grass, reedgrass, goldenrod, and arrowgrass.

Populations are often dynamic and "move" within a watershed as disturbances create new habitat or succession eliminates old habitat (Fertig and Beauvais 1999). The orchid is well adapted to disturbances from stream movement and is tolerant of other disturbances, such as grazing, that are common to grassland riparian habitats (USFWS 1995). Ute ladies'-tresses colonize early successional riparian habitats such as point bars, sand bars, and low-lying gravelly, sandy, or cobbly edges, persisting in those areas where the hydrology provides continual dampness in the root zone through the growing season. The orchid establishes in heavily disturbed sites, such as revegetated gravel pits, heavily grazed riparian edges, and along well-traveled foot trails on old berms (USFWS 1995).

Prior to 2005, four orchid populations had been documented within Wyoming, all discovered between 1993 and 1997 (Fertig and Beauvais 1999). Five additional sites were located in 2005 (Heidel 2005). The new locations were in the same drainages as the original four populations, with two on the same tributary and within a few miles of an original location. Drainages with documented orchid populations include Antelope Creek in northern Converse County, Bear Creek in northern Laramie and southern Goshen Counties, Horse Creek in Laramie County, and Niobrara River in Niobrara County. No occurrences have been recorded in Campbell County.

Existing Environment: Areas of suitable habitat within the Maysdorf LBA Tract and adjacent study area were surveyed by ESCO Associates in August 2005. Topographical and wetland delineation maps for the study area were reviewed to identify all drainages that may contain the orchid. Suitable habitat factors included less steep stream banks, light soil texture and well drained soils, close lateral or vertical distance to perennial water source during the flowering period, lack of plant competition, lack of general soil alkalinity/salinity, and current or historical management practices that did not promote overgrazing and extensive use of riparian areas. Suitable habitat was traversed on foot

during the time of actual flowering of the known population, and it involved walking entire lengths of the drainages documenting locations of potential habitat and searching for this species.

Most of the suitable habitat within the Maysdorf LBA Tract and adjacent study area is found along the Belle Fourche River and its tributaries. The river, which flows generally from west to east through the southern portion of the Maysdorf LBA Tract, is classified as an ephemeral stream in this area. Limited portions of the river receive recharge from bank storage making the stream locally intermittent. In response to surface discharge of groundwater associated with CBNG development upstream of the Maysdorf tract, which is a relatively recent phenomenon, streamflow occurrence is now more persistent and the river's channel is seldom completely dry. Several unnamed and named ephemeral tributaries of the Belle Fourche River drain portions of the Maysdorf LBA Tract. As discussed above, there are six stock reservoirs and two playas on the tract. The stock reservoirs are present on these ephemeral drainages and all are constructed earthen berms or dams. These ponds generally contain water only in early spring, then dry up in summer. There is one roughly 30-acre playa formed by a natural topographic depression in the northern portion of Section 4, T.46N., R.71W., and a second roughly 40-acre playa formed by a natural depression exists in the west-central portion of Section 21, T.47N., R.71W.

As discussed in Section F-4.0, a total of 154.2 acres of Waters of the U.S., including approximately 30.0 acres of jurisdictional wetlands and 3.2 acres of jurisdictional other Waters of the U.S., has been identified within the Maysdorf tract as applied for, the area added by Alternatives 2 and 3, and a buffer area around the tract sufficient to mine and reclaim the tract as a part of the existing Cordero Rojo Mine operation.

No individuals of the Ute ladies'-tresses orchid were located during the 2005 survey. CMC is currently planning to conduct a second survey of suitable habitat for Ute ladies'-tresses in 2006.

Effects of the Proposed Project: Mining the federal coal included in the Maysdorf LBA Tract, if the tract is leased under the Proposed Action or Alternatives 2 and 3, may affect, but is not likely to adversely affect Ute ladies'-tresses. Typical suitable habitat for this species is present on the tract along the Belle Fourche River valley. Outside of the Belle Fourche River valley, typical suitable habitat is rare in the study area. Surveys of the existing suitable habitat at the Cordero Rojo Mine and other mines in this area have not found any Ute ladies'-tresses. Because of the ability of this species to persist below ground or above ground without flowering, single season surveys that meet the current USFWS survey guidelines may not detect populations. If undetected populations are present, they could be lost to surface disturbing activities.

Jurisdictional wetlands located in the Maysdorf LBA Tract that are destroyed by mining operations would be replaced in accordance with the requirements of Section 404 of the Clean Water Act, as determined by the U.S. Army Corps of Engineers (COE). The replaced wetlands may not duplicate the exact function and landscape features of the pre-mine wetlands. COE considers the type and function of each jurisdictional wetland that will be impacted and may require restoration of additional acres if the type and function of the restored wetlands will not completely replace the type and function of the original wetland. Replacement of non-jurisdictional and functional wetlands may be required by the surface land owner and/or WDEQ/LQD. WDEQ/LQD allows and sometimes requires mitigation of non-jurisdictional wetlands affected by mining, depending on the values associated with the wetland features. WDEQ/LQD also requires replacement of playas with hydrologic significance.

Cumulative Effects: Alterations of stream morphology and hydrology are believed to have extirpated Ute ladies'-tresses from most of its historical range (USFWS 2002). Disturbance and reclamation of streams by surface coal mining may alter stream morphology and hydrology. The large quantities of water produced with CBNG development and discharged on the surface may also alter stream morphology and hydrology.

F-4.2 Endangered Species

F-4.2.1 Black-footed ferret (*Mustela nigripes*)

Biology and Habitat Requirements: The black-footed ferret is a federally-listed endangered species. The black-footed ferret historically occurred throughout Texas, Oklahoma, New Mexico, Arizona, Utah, Kansas, North and South Dakota, Montana, Wyoming, Nebraska, and Colorado. The last known wild population of black-footed ferrets was discovered in Meeteetse, Wyoming in 1981. This population became decimated by canine distemper so the remaining individuals were captured and raised in protective captive breeding facilities in an effort to prevent the species' extinction (Clark and Stromberg 1987). In the early 1990s, captive-bred black-footed ferrets were released in the Shirley Basin in the first reintroduction of the species in North America. Recent survey efforts in the Shirley Basin have confirmed a self-sustaining black-footed ferret population at this reintroduction site. The ROD for the Thunder Basin National Grassland LRMP (USDA-FS 2002) established a Black-Footed Ferret Reintroduction Habitat Management Area (MA 3.63) in the Thunder Basin National Grasslands, which is located about 10 to 15 miles south of the Maysdorf LBA Tract, and is east of the area where there are mineable coal beds. According to the guidance in the LRMP, MA 3.63 will be managed as reintroduction habitat for black-footed ferrets.

The black-footed ferret, a nocturnally active mammal, depends almost entirely upon the prairie dog for its survival. Ferrets may occur within colonies of white-tailed or black-tailed prairie dogs. The USFWS has determined that, at a

minimum, potential habitat for the black-footed ferret must include a single white-tailed prairie dog colony of greater than 200 acres, or a complex of smaller colonies within a 4.3 mile (seven kilometers) radius circle totaling 200 acres (USFWS 1989). Minimum black-tailed prairie dog colony size for ferrets is 80 acres (USFWS 1989).

The decline in ferret populations has been attributed to the reduction in the extensive prairie dog colonies that historically existed in the western United States. In Wyoming, this species historically occurred east of the Rocky Mountain foothills and may have occupied millions of acres (USFWS 2000). The three major impacts that have influenced black-tailed prairie dog populations are the initial conversion of prairie grasslands to cropland in the eastern portion of its range from approximately the 1880s-1920s; large-scale control efforts conducted from approximately 1918 through 1972, when an Executive Order was issued banning the use of compound 1080; and the introduction of sylvatic plague into North American ecosystems in 1908 (USFWS 2000). The Bureau of Sport Fisheries and Wildlife estimated that there were approximately 49,000 remaining acres of black-tailed prairie dog colonies in Wyoming in 1961. By the time that strychnine and 1080 poisoning was banned in 1972, colonies had declined to less than the 1961 estimates in the intervening time. Increases in occupied black-tailed prairie dog habitat did occur following the ban of strychnine and 1080, but the black-tailed prairie dog population has been declining recently due to the impacts of sylvatic plague (USFWS 2000). USFWS estimated that about 125,000 acres of black-tailed prairie dog occupied habitat exists in Wyoming (USFWS 2000).

Existing Environment: The Maysdorf LBA Tract is within the historical range of the black-footed ferret, although no black-footed ferrets are presently known to occur in northeastern Wyoming. During the 1980s, WGFD, in cooperation with other agencies, conducted searches for black-footed ferrets in Wyoming in the places they were most likely to be found, but these searches were not successful (Martin Grenier, personal communication, 10/14/2003). In a February 3, 2004 memorandum to the Wyoming BLM State Director, the USFWS declared that black-footed surveys are no longer necessary in black-tailed prairie dog colonies within Wyoming after evaluating the potential for a previously unidentified black-footed ferret population to occur in Wyoming.

Multiple years of wildlife surveys covering the CMC and CRI Mines and surrounding area have been unsuccessful in producing ferret sightings.

IR has mapped the current acreage of prairie dog colonies in the vicinity of the Cordero Rojo Mine by walking the perimeters of colonies and delineating them on topographic maps. No colonies are currently present on or within two miles of the Maysdorf LBA Tract as proposed and the area added by Alternatives 2 or 3. One black-tailed prairie dog colony exists within one mile east of the Cordero Rojo Mine's current permit area while another town is located more than three miles west of the current mine permit area and the Maysdorf LBA

Tract (Figure F-4). The town located east of the CMC mine permit area is currently smaller than that depicted. The boundaries shown on Figure F-4 are historical town boundaries and, although black-tailed prairie dogs still exist in the area, their numbers and distribution are much smaller than previously recorded. No evidence of ferrets has been recorded during general or specific ferret surveys over the last 29 years (1976–2005) conducted by wildlife consultants for the CMC and CRI Mines and other mines in this area.

Effects of the Proposed Project: Mining the federal coal included in the Maysdorf LBA Tract, if a lease is issued under the Proposed Action or Alternatives 2 and 3, would have no effect on black-footed ferrets. The black-footed ferret is almost entirely dependent on the prairie dog for survival. Black-tailed prairie dog occupied habitat has declined significantly from historic estimates and the species seems to be scattered throughout its historic range in eastern Wyoming. The reductions in black-tailed prairie dog populations due to poisoning prior to 1972 and due to recent plague outbreaks have reduced the potential for black-footed ferret survival in northeastern Wyoming. Searches of the best remaining black-footed ferret habitat in Wyoming conducted in the 1980s were not successful in finding any ferrets. General wildlife surveys and specific ferret surveys were conducted for many years at the CMC and CRI Mines, and at other mines in this area. No black-footed ferrets have ever been observed during these surveys. No black-tailed prairie dog colonies are currently present on or within two miles of the Maysdorf LBA Tract as proposed and the area added by Alternatives 2 and 3.

Cumulative Effects: Mineral development within black-tailed prairie dog colonies is a leading cause of ferret habitat loss in the PRB. Surface coal mining tends to have more intense impacts on fairly localized areas, while oil and gas development tends to be less intensive but spread over larger areas. Oil and gas development and mining activities have requirements for reclamation of disturbed areas as resources are depleted. In reclaimed areas, vegetation cover may differ from undisturbed areas. In the case of surface coal mines, re-established vegetation would be dominated by species mandated in the reclamation seed mixtures (to be approved by WDEQ). The majority of the approved plant species are native to the area; however, reclaimed areas may not serve ecosystem functions presently served by undisturbed vegetation communities and habitats, particularly in the short-term, when species composition, shrub cover, and other environmental factors are likely to be different. Shifts in habitat composition or distribution following reclamation could increase or decrease potential habitat for prairie dogs in this area. However, black-tailed prairie dogs have been recorded invading and establishing towns on reclaimed coal mined lands in northeastern Wyoming (IR 2005).

Potential ferret habitat is also affected by other impacts to prairie dog populations. Plague can infect and eliminate entire prairie dog colonies.

Poisoning and recreational prairie dog shooting may locally reduce prairie dog populations, but seldom completely eliminate colonies.

F-5.0 SUMMARY OF DETERMINATIONS

Table F-1 summarizes the determinations for federally listed T&E species in the area of the Maysdorf LBA Tract that may result from implementing the Proposed Action or Alternatives 2 and 3.

Table F-1. Effects Evaluation of Federal T&E Species in the Area of the Maysdorf LBA Tract.

Status	Species Common Name	Potential Effects
Threatened:	Bald eagle	May affect ¹
	Ute ladies'-tresses	May affect ¹
Endangered:	Black-footed ferret	No effect

¹ Not likely to adversely affect individuals or populations.

F-6.0 REGULATORY REQUIREMENTS AND MITIGATION

The issuance of a Federal coal lease grants the lessee the exclusive rights to mine the coal, subject to the terms and conditions of the lease. Lease ownership is necessary for mining federal coal, but lease ownership does not authorize mining operations. Surface coal mining operations are regulated in accordance with the requirements of the Surface Mining Control and Reclamation Act of 1977 (SMCRA) and Wyoming State regulations. SMCRA gives the Office of Surface Mining Reclamation and Enforcement (OSM) primary responsibility to administer programs that regulate surface coal mining operations and the surface effects of underground coal mining operations. Pursuant to Section 503 of SMCRA, the WDEQ developed, and in November 1980 the Secretary of the Interior approved a permanent program authorizing WDEQ to regulate surface coal mining operations and surface effects of underground mining on nonfederal lands within the State of Wyoming. In January 1987, pursuant to Section 523(c) of SMCRA, WDEQ entered into a cooperative agreement with the Secretary of the Interior authorizing WDEQ to regulate surface coal mining operations and surface effects of underground mining on federal lands within the state. In order to get approval of this cooperative agreement, the state had to demonstrate that the state laws and regulations are no less stringent than, meet the minimum requirements of, and include all applicable provisions of SMCRA.

If the Maysdorf LBA Tract is leased, it would be a maintenance lease for the existing Cordero Rojo Mine, which currently has both an approved Mineral Leasing Act of 1920 (MLA) mining plan and an approved State mining and reclamation permit. In the case of maintenance leases, such as the Maysdorf

LBA Tract, the existing MLA mining plan and State mining and reclamation plan must be amended to include the newly leased areas before they can be mined. In order to amend the existing MLA mining plan and State mining and reclamation permit, the company would be required to submit a detailed permit application package to WDEQ before starting surface coal mining operations on the newly acquired leases. WDEQ/LQD would review the permit application package to insure the permit application complies with the permitting requirements and the coal mining operation will meet the performance standards of the approved Wyoming program. If the permit application package does comply, WDEQ would issue the applicant an amended permit that would allow the permittee to extend coal mining operations onto the newly acquired leases.

Protection of fish, wildlife, and related environmental values is required under SMCRA regulations at 30 CFR 816.97, which state:

“No surface mining activity shall be conducted which is likely to jeopardize the continued existence of endangered or threatened species listed by the Secretary of which is likely to result in the destruction or adverse modification of designated critical habitats of such species in violation of the Endangered Species Act of 1973, as amended.”

In addition to requiring the operator to minimize disturbances and adverse impacts on fish, wildlife, and related environmental values, the regulations at 30 CFR 816.97 disallow any surface mining activity which is likely to jeopardize the continued existence of endangered or threatened species and require that the operator use the best technology currently available to minimize electrocution hazards to raptors; locate and operate haul and access roads to avoid or minimize impacts on important fish and wildlife species; and design fences, conveyors, and other potential barriers to permit passage of large mammals. Section 7 consultation would be required prior to approval of the mining and reclamation plan modification. Additional measures to ensure compliance with the ESA and SMCRA can be developed when the detailed mining plan, which identifies the actual location of the disturbance areas, how and when they would be disturbed, and how they would be reclaimed, is developed and reviewed for approval. At the leasing stage, a detailed mining and reclamation plan is not available for evaluation or development of appropriate mitigation measures specific to an actual proposal to mine.

The following is a partial list of measures related to federally-listed species that are required as part of the mining and reclamation permits:

- avoiding bald eagle disturbance;
- restoring bald eagle foraging areas disturbed by mining;
- using raptor safe power lines; and
- surveying for Ute ladies'-tresses if habitat is present.

F-7.0 CUMULATIVE IMPACTS

Existing habitat-disturbing activities in the PRB include surface coal mining; conventional oil and gas and CBNG development; uranium mining; sand, gravel, and scoria mining; ranching; agriculture; road, railroad, and power plant construction and operation; recreational activities; and rural and urban housing development. Mining, construction and agricultural activities, and urban development tend to have more intense impacts on fairly localized areas, while ranching, recreational activities, and oil and gas development tend to be less intensive but spread over larger areas. Oil and gas development and mining activities have requirements for reclamation of disturbed areas as resources are depleted. The net area of energy disturbance in the Wyoming PRB has been increasing. In the short term, this means a reduction in the available habitat for T&E plant and wildlife species. In the long term, habitat is being and will continue to be restored as reclamation proceeds.

BLM has recently completed a regional technical study of current and proposed or potential development activity in the PRB to help the agency evaluate the impacts of coal development in the PRB. The *Powder River Basin Coal Review* consists of three tasks: Task 1 updates the BLM's 1996 status check for coal development in the PRB, Task 2 develops a forecast of reasonably foreseeable development in the PRB through the year 2020, and Task 3 predicts cumulative impacts that would be expected to occur as a result of the projected development. The information about existing development in the following paragraphs is taken from the *Powder River Basin Coal Review* Task 2 report (BLM 2005) and BLM lease records. The project area for the coal review encompasses over eight million acres and includes all of Campbell, Sheridan, and Johnson Counties and the northern portion of Converse County in northeastern Wyoming.

Oil and gas exploration and production have been ongoing in the PRB for more than 100 years. Conventional (non CBNG) oil and gas fields are, for the most part, concentrated in the central and southern parts of the structural basin. Development of the CBNG resources from the coal beds is a more recent occurrence, with CBNG production in the Wyoming PRB starting in the late 1980s. As of 2003, an estimated 187,761 acres had been disturbed in the coal review project area as a result of oil and gas development activities, but approximately 115,045 acres of that disturbance has been reclaimed. This includes conventional oil and gas and CBNG wells and associated facilities and major transportation pipelines.

BLM estimates that the existing federal coal leases in the Wyoming PRB include approximately 121,185 acres. The currently pending federal coal LBA tracts (including the Maysdorf LBA Tract) include approximately 13,895 additional acres. The majority of the coal in the areas permitted for surface coal mining is federal, but some state and private leases are included within some of the existing mine permit areas. All of the current and proposed federal

coal leases are concentrated near the outcrop of the Wyodak coal bed, which is located in eastern Campbell County and the extreme northeastern edge of Converse County. As of 2003, the surface coal mining operations along the Wyodak outcrop had disturbed approximately 68,794 acres. Approximately 24,097 of those acres of disturbance are occupied by “permanent” mine facilities, such as roads, buildings, coal handling facilities, etc., which are not available for reclamation until after coal mining operations end. Of the remaining 44,697 acres of disturbance available for reclamation, approximately 21,238 acres had been reclaimed.

The *Powder River Basin Coal Review* identified an estimated 4,891 additional acres of coal-related development disturbance (i.e., coal-fired power plants, railroads, and coal technology projects) as of 2003.

The estimated total development-related disturbance in the Wyoming PRB in 2003 was 264,704 acres. In addition to the coal and oil and gas development discussed above, this total includes other types of development disturbance, such as reservoirs and industrial fabrication firms, as well as public and private infrastructure, such as highways and roads, government buildings, and residential and commercial real estate development. It should be noted that some of these disturbances overlap one another. In such cases, the disturbance acreage is counted separately under each category, but is not counted twice in determining the total area of disturbance.

Cumulative effects would also occur to T&E plant and wildlife resources as a result of indirect impacts. One factor is the potential import and spread of noxious weeds around roads and facilities. Noxious weeds have the ability to displace native vegetation and hinder reclamation efforts. Control of noxious weeds is addressed in surface coal mining and reclamation plans. If weed mitigation and preventative procedures are applied to all construction and reclamation practices, the impact of noxious weeds on T&E plants and wildlife would be minimized.

In reclaimed areas, vegetation cover often differs from undisturbed areas. In the case of surface coal mines, re-established vegetation would be dominated by species mandated in the reclamation seed mixtures (to be approved by WDEQ). The majority of the species in the approved reclamation seed mixtures are native to the area; however, reclaimed areas may not serve ecosystem functions presently served by undisturbed vegetation communities and habitats. In the short-term in particular, species composition, shrub cover, and other environmental factors are likely to differ from pre-disturbance vegetation communities and habitats. Establishment of noxious weeds and alteration of vegetation in reclaimed areas has the potential to alter T&E plant and wildlife habitat composition and distribution.

Potential adverse effects to listed and proposed species that have occurred and would continue to occur as a result of existing and potential future activities in

the PRB would include direct loss of habitat, indirect loss of habitat due to human and equipment disturbance, habitat fragmentation, displacement of bald eagle prey species and the resultant change in bald eagle foraging, and mortality caused by equipment activities, motor vehicle collisions, power line collisions, and power line electrocution. The existing mines have developed mitigation procedures, as required by SMCRA (at 30 CFR 816.97) and Wyoming State regulations, to protect T&E species. These procedural requirements would be extended to include mining operations on the Maysdorf LBA Tract, if it is leased as proposed and after required detailed plans to mine the coal and reclaim the mined-out areas are developed and approved.

F-8.0 CREDENTIALS OF SURVEY PERSONNEL

Intermountain Resources of Laramie, Wyoming

Jim Orpet

Mr. Orpet obtained a Bachelors of Science degree in Wildlife Management and a Master of Science degree in Range Management from the University of Wyoming and has accumulated over 27 years of field experience in wildlife surveys. This experience includes surveys for T&E species, surveys for species of high state or federal interest and preparation of wildlife reports for over 100 projects throughout Wyoming. Mr. Orpet was qualified in 1987 by the WDEQ/LQD to conduct T&E and other plant and animal surveys on Abandoned Mine Lands (AML) projects within the state. Qualification at that time was based on review and approval of Mr. Orpet's credentials by the WGFD and the USFWS. Mr. Orpet has also completed numerous wetland surveys that have been approved by the COE.

Russel Tait

Mr. Tait obtained a Bachelor of Science degree in Wildlife Management from the University of Wyoming and has accumulated 13 years of field experience in wildlife surveys in Wyoming. Mr. Tait has assisted Mr. Orpet in completion of wildlife inventories for over eight years on coal mines and other resource development projects in Wyoming, including black-footed ferret surveys, bald eagle surveys, sage grouse lek surveys and surveys for other species of high federal or state interest.

ESCO Associates Inc. of Boulder, Colorado

David Buckner

Mr. Buckner obtained a Bachelors of Arts degree, Master of Arts degree, and Ph.D. in Plant Ecology from the University of Colorado and has accumulated over 20 years of field experience in vegetation and rare plant surveys.

Mr. Buckner's rare plant survey experience includes:

- *Asclepias ruthiae*, Grand County, Utah, 1982;
- *Stellaria irrigua*, La Plata County, Colorado;

- *Sclerocactur glaucus*, Mesa and Garfield Counties, Colorado, 1987;
- *Penstemon harringtonii*, Eagle, Grand, and Routte Counties, Colorado, 1982, 1990, 1991, 1993, and 1994.

Mr. Buckner's familiarity with *Spiranthes diluvialis* includes:

- observation of flowering populations in Boulder County, Colorado, 1991-2004;
- observation of vegetative sprouts of individuals occurring in Boulder County populations, January to April 1982, June 1993, and May 1995.

F-9.0 REFERENCES AND LITERATURE CITED

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APPENDIX G

**BLM SENSITIVE SPECIES EVALUATION FOR THE
MAYSDORF COAL LEASE APPLICATION EIS**

BLM SENSITIVE SPECIES EVALUATION

INTRODUCTION

BLM Wyoming has prepared a list of sensitive species to focus species management efforts towards maintaining habitats under a multiple use mandate. The authority for this policy and guidance comes from the Endangered Species Act (ESA), as amended; Title II of the Sikes Act, as amended; the Federal Land Policy Management Act of 1976 (FLPMA) (43 U.S.C. 1716); and the Department Manual 235.1.1A (BLM 2001).

The goals of the sensitive species policy are to:

- Maintain vulnerable species and habitat components in functional BLM ecosystems.
- Ensure sensitive species are considered in land management decisions.
- Prevent a need for species listing under the ESA.
- Prioritize needed conservation work with an emphasis on habitat.

PROJECT DESCRIPTION

Under the Proposed Action, BLM will hold a lease for the federal coal lands in the Maysdorf LBA Tract as applied for or Alternatives 2 or 3 (see Figure 2-1 and the land descriptions in Section 2.1 of this EIS). It is assumed that the applicant for the tract, CMC, would be the successful bidder and that the tract would be mined as a maintenance lease for the existing Cordero Rojo Mine. The surface estate on the Maysdorf LBA Tract includes federal and privately owned lands.

SPECIES OCCURRENCE AND HABITAT DESCRIPTIONS

Sensitive species were listed for the BLM Buffalo Field Office within its range. Some sensitive species could or do occur within the Maysdorf LBA Tract. Specialized habitat requirements (i.e., caves, cliffs, calcareous rock outcrops) make occupation for other sensitive species unlikely. Table G-1 lists BLM sensitive species, summarizes their habitat requirements, and indicates if they have been observed on or around the tract. Additional information on occurrences of these species on the tract can be found in Section 3.10 of the Maysdorf Coal Lease Application EIS or in the Supplemental Information Document, which is available upon request.

Appendix G

Table G-1. BLM Sensitive Species for the Buffalo Field Office and Habitat Requirements and Observations on Maysdorf LBA Tract.

Common Name (scientific name)	Habitat	Observed on Maysdorf LBA Tract
Amphibians		
Northern leopard frog (<i>Rana pipiens</i>)	Beaver ponds, permanent water in plains and foothills	Yes, incidental siting during wildlife surveys
Spotted frog (<i>Rana pretiosa</i>)	Ponds, sloughs, small streams	---- ¹
Birds		
Baird's sparrow (<i>Ammodramus bairdii</i>)	Grasslands, weedy fields	No
Brewer's sparrow (<i>Spizella breweri</i>)	Basin-prairie shrub	Common Breeder
Burrowing owl (<i>Athene cunicularia</i>)	Grasslands, basin-prairie shrub	Uncommon Breeder
Ferruginous hawk (<i>Buteo regalis</i>)	Basin-prairie shrub, grasslands, rock outcrops	Common Breeder
Greater sage-grouse (<i>Centrocercus urophasianus</i>)	Basin-prairie shrub, mountain-foothill shrub	Common Breeder
Loggerhead shrike (<i>Lanius ludovicianus</i>)	Basin-prairie shrub, mountain-foothill shrub	Occasional Breeder
Long-billed curlew (<i>Numenius americanus</i>)	Grasslands, plains, foothills, wet meadows	Uncommon Breeder
Mountain Plover (<i>Charadrius montanus</i>)	Shortgrass/midgrass grasslands, basin-prairie shrubs	No
Northern goshawk (<i>Accipiter gentilis</i>)	Conifer and deciduous forests	---- ¹
Peregrine falcon (<i>Falco peregrinus</i>)	Cliffs	No
Sage sparrow (<i>Amphispiza billneata</i>)	Basin-prairie shrub, mountain-foothill shrub	No
Sage thrasher (<i>Oreoscoptes montanus</i>)	Basin-prairie shrub, mountain-foothill shrub	No
Trumpeter swan (<i>Cygnus buccinator</i>)	Lakes, ponds, rivers	---- ¹
White-faced ibis (<i>Plegadis chihi</i>)	Marshes, wet meadows	---- ¹
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	Open woodlands, streamside willow and alder groves	No

Appendix G

Table G-1. BLM Sensitive Species for the Buffalo Field Office and Habitat Requirements and Observations on Maysdorf LBA Tract (Continued).

Common Name (scientific name)	Habitat	Observed on Maysdorf LBA Tract
Fish		
Yellowstone cutthroat trout (<i>Oncorhynchus clarki</i>)	Cold water streams and lakes	---- ¹
Mammals		
Black-tailed prairie dog (<i>Cynomys ludovicianus</i>)	Shortgrass/midgrass grasslands	No prairie dog towns on tract
Fringed myotis (<i>Myotis thysanodes</i>)	Conifer forests, woodland chaparral, caves and mines	---- ¹
Long-eared myotis (<i>Myotis evotis</i>)	Conifer and deciduous forest, caves and mines	---- ¹
Spotted bat (<i>Euderma maculatum</i>)	Cliffs over perennial water, basin-prairie shrub	---- ¹
Swift fox (<i>Vulpes velox</i>)	Grasslands	No
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	Forests, basin-prairie shrub, caves and mines	---- ¹
Plants		
Porter's sagebrush (<i>Artemisia porteri</i>)	Sparsely vegetated badlands of ashy or tufaceous mudstone and clay slopes; 5,300 to 6,500 ft	---- ¹
William's wafer parsnip (<i>Cymopterus williamsii</i>)	Open ridgetops and upper slopes with exposed limestone outcrops or rockslides; 6,000 to 8,300 ft	---- ¹

¹ Habitat generally lacking or very limited

REFERENCES AND LITERATURE CITED

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APPENDIX H

**CBNG WELLS CAPABLE OF PRODUCTION
ON OR IN SECTIONS ADJACENT TO THE
MAYSDORF LBA TRACT**

Coalbed Methane Wells Capable of Production

Cordero Rojo Mine

Maysdorf Coal Lease By Application Area

API	Company	Well Name	TWP	RNG	Section	Status
530818	Lance Oil & Gas Co.	Atkins No. 4-14	46N	71W	4	PG
530819	Lance Oil & Gas Co.	Atkins No. 4-24	46N	71W	4	PG
530823	Lance Oil & Gas Co.	Pittman No. 4-31	46N	71W	4	PG
530931	Lance Oil & Gas Co.	Kirkpatrick No. 4-11	46N	71W	4	PG
530932	Lance Oil & Gas Co.	Kirkpatrick No. 4-21	46N	71W	4	PG
530799	Lance Oil & Gas Co.	Thrush No. 5-34	46N	71W	5	PG
530800	Lance Oil & Gas Co.	Thrush No. 5-41	46N	71W	5	PG
530801	Lance Oil & Gas Co.	Thrush No. 5-42	46N	71W	5	PG
530802	Lance Oil & Gas Co.	Thrush No. 5-44	46N	71W	5	PG
530869	Lance Oil & Gas Co.	Garrett No. 5-11	46N	71W	5	PG
530951	Lance Oil & Gas Co.	Garrett No. 5-12	46N	71W	5	PG
531745	Lance Oil & Gas Co.	Garrett No. 5-13	46N	71W	5	PG
530824	Lance Oil & Gas Co.	Peters No. 8-32	46N	71W	8	PG
530825	Lance Oil & Gas Co.	Peters No. 8-42	46N	71W	8	PG
534331	Bill Barrett Corp.	CC-CBM No. 14-14	46N	71W	14	PG
534389	Bill Barrett Corp.	CC CBM No. 24-14	46N	71W	14	PG
534615	Bill Barrett Corp.	CC-CBM No. 13-14	46N	71W	14	PG
534616	Bill Barrett Corp.	CC-CBM No. 23-14	46N	71W	14	PG
542179	Bill Barrett Corp.	CC CBM Federal No. 33-14	46N	71W	14	PG
542180	Bill Barrett Corp.	CC CBM Federal No. 43-14	46N	71W	14	PG
542181	Bill Barrett Corp.	CC CBM Federal No. 34-14	46N	71W	14	PG
542182	Bill Barrett Corp.	CC CBM Federal No. 44-14	46N	71W	14	PG
543286	Bill Barrett Corp.	CC CBM Federal No. 32-14	46N	71W	14	PG

Well Data Obtained from WOGCC, May 2005.

Status Codes: FL = Flowing; SI = Shut-in; PS = Pumping Submersible

Coalbed Methane Wells (Continued)						
API	Company	Well Name	TWP	RNG	Section	Status
532393	Rim Operating Inc.	CBM A No. 24-15	46N	71W	15	PG
532745	Rim Operating Inc.	CBM A No. 23-15R	46N	71W	15	PG
534278	Rim Operating Inc.	CBM A No. 42-15	46N	71W	15	PG
534279	Rim Operating Inc.	CBM A No. 21-15	46N	71W	15	PG
534280	Rim Operating Inc.	CBM A No. 44-15	46N	71W	15	PG
532392	Rim Operating Inc.	CBM A No. 13-16	46N	71W	16	PG
532534	Rim Operating Inc.	CBM A No. 12-16	46N	71W	16	PG
532585	Rim Operating Inc.	CBM A No. 43-16R	46N	71W	16	PG
532589	Rim Operating Inc.	CBM A No. 41-16R	46N	71W	16	PG
532736	Rim Operating Inc.	CBM A No. 22-16R	46N	71W	16	PG
551220	Rim Operating Inc.	CBM A Anderson No. 43-16	46N	71W	16	PG
541898	Rocky Mountain Gas Inc.	Dunlap No. 6-24-47	47N	71W	6	PG
541914	Rocky Mountain Gas Inc.	Dunlap No. 6-34-47	47N	71W	6	PG
542186	Rocky Mountain Gas Inc.	Dunlap No. 6-13-47	47N	71W	6	PG
541908	Rocky Mountain Gas Inc.	Dunlap No. 7-22-47	47N	71W	7	PG
541909	Rocky Mountain Gas Inc.	Dunlap No. 7-21-47	47N	71W	7	PG
541910	Rocky Mountain Gas Inc.	Dunlap No. 7-31-47	47N	71W	7	PG
541911	Rocky Mountain Gas Inc.	Dunlap No. 7-41-47	47N	71W	7	PG
541912	Rocky Mountain Gas Inc.	Dunlap No. 7-32-47	47N	71W	7	PG
542748	Rocky Mountain Gas Inc.	Dunlap No. 7-23-47	47N	71W	7	PG
544412	Rocky Mountain Gas Inc.	Dunlap No. 7-13-47	47N	71W	7	PG
529869	Warren E & P Inc.	State No. 13-16	47N	71W	16	PG
530170	Warren E & P Inc.	State No. 2-16	47N	71W	16	PG
530499	Warren E & P Inc.	State No. 11-16	47N	71W	16	PG
530502	Warren E & P Inc.	State No. 14-16	47N	71W	16	PG
530540	Warren E & P Inc.	State No. 7-16	47N	71W	16	PG
530790	Lance Oil & Gas Co.	State No. 1-16	47N	71W	16	PG
530791	Lance Oil & Gas Co.	State No. 3-16	47N	71W	16	PG
530792	Lance Oil & Gas Co.	State No. 6-16	47N	71W	16	PG
530793	Lance Oil & Gas Co.	State No. 8-16	47N	71W	16	PG

Coalbed Methane Wells (Continued)						
API	Company	Well Name	TWP	RNG	Section	Status
530794	Lance Oil & Gas Co.	State No. 10-16	47N	71W	16	PG
530795	Lance Oil & Gas Co.	State No. 15-16	47N	71W	16	PG
533763	Bowden Energy Co.	MU No. 44-17	47N	71W	17	PG
533764	Bowden Energy Co.	Maysdorf Unit No. 34-17	47N	71W	17	PG
533766	Bowden Energy Co.	MU No. 12-17	47N	71W	17	PG
533767	Bowden Energy Co.	MU No. 11-17	47N	71W	17	PG
533768	Bowden Energy Co.	MU No. 22-17	47N	71W	17	PG
533769	Bowden Energy Co.	MU No. 23-17	47N	71W	17	PG
533770	Bowden Energy Co.	MU No. 13-17	47N	71W	17	PG
531368	Lance Oil & Gas Co.	Hayden No. 18-33	47N	71W	18	PG
533761	Bowden Energy Co.	MU No. 41-18	47N	71W	18	PG
533765	Bowden Energy Co.	MU No. 42-18	47N	71W	18	PG
535669	Peabody Natural Gas LLC	Duvall No. 18N	47N	71W	20	PG
530972	Lance Oil & Gas Co.	Duvall CG No. 14-20	47N	71W	20	PG
530993	Lance Oil & Gas Co.	K & N CG No. 23-20	47N	71W	20	PG
531216	Lance Oil & Gas Co.	DOI No. 13-20	47N	71W	20	PG
531217	Lance Oil & Gas Co.	Duvall No. 24-20	47N	71W	20	PG
531218	Lance Oil & Gas Co.	KD No. 11-20	47N	71W	20	PG
531219	Lance Oil & Gas Co.	ND No. 12-20	47N	71W	20	PG
533762	Bowden Energy Co.	MU No. 31-20	47N	71W	20	PG
530982	Warren E & P Inc.	USA Maysdorf No. 7-21	47N	71W	21	PG
530983	Warren E & P Inc.	USA Maysdorf No. 4-21	47N	71W	21	PG
531304	Lance Oil & Gas Co.	Lake No. 13-21	47N	71W	21	PG
531305	Lance Oil & Gas Co.	Hayden No. 14-21	47N	71W	21	PG
530974	Lance Oil & Gas Co.	Haysen C G No. 34-28	47N	71W	28	PG
531303	Lance Oil & Gas Co.	BH No. 24-28	47N	71W	28	PG
531306	Lance Oil & Gas Co.	MH No. 13-29	47N	71W	29	PG
531316	Lance Oil & Gas Co.	Garrett No. 29-43	47N	71W	29	PG
531321	Lance Oil & Gas Co.	Garrett No. 29-22	47N	71W	29	PG
531322	Lance Oil & Gas Co.	Garrett No. 29-12	47N	71W	29	PG

Appendix H

Coalbed Methane Wells (Continued)						
API	Company	Well Name	TWP	RNG	Section	Status
531799	Lance Oil & Gas Co.	L H No. 14-29	47N	71W	29	PG
531312	Lance Oil & Gas Co.	Garrett No. 32-31	47N	71W	32	PG
531314	Lance Oil & Gas Co.	Garrett No. 32-21	47N	71W	32	PG
531776	Citation Oil & Gas Corp.	Keidel No. 33-32	47N	71W	32	PG
531777	Citation Oil & Gas Corp.	Keidel No. 44-32	47N	71W	32	PG
530806	Lance Oil & Gas Co.	Haight No. 33-23	47N	71W	33	PG
530807	Lance Oil & Gas Co.	Haight No. 33-33	47N	71W	33	PG
530808	Lance Oil & Gas Co.	Haight No. 33-34	47N	71W	33	PG
531309	Lance Oil & Gas Co.	Garrett No. 33-11	47N	71W	33	PG
532295	Lance Oil & Gas Co.	SMH No. 31-33	47N	71W	33	PG
532296	Lance Oil & Gas Co.	SMM No. 41-33	47N	71W	33	PG
532297	Lance Oil & Gas Co.	SML No. 42-33	47N	71W	33	PG
532298	Lance Oil & Gas Co.	SMW No. 22-33	47N	71W	33	PG
530468	Lance Oil & Gas Co.	Hayden No. 8-28	47N	71W	28	PG
541907	Rocky Mountain Gas Inc.	Dunlap No. 6-23-47	47N	71W	6	SI
541913	Rocky Mountain Gas Inc.	Dunlap No. 6-33-47	47N	71W	6	SI
541915	Rocky Mountain Gas Inc.	Dunlap No. 6-43-47	47N	71W	6	SI
541916	Rocky Mountain Gas Inc.	Dunlap No. 6-44-47	47N	71W	6	SI
542112	Rocky Mountain Gas Inc.	Dunlap No. 6-12-47	47N	71W	6	SI
542113	Rocky Mountain Gas Inc.	RAG No. 6-22-47	47N	71W	6	SI
542301	Rocky Mountain Gas Inc.	RAG No. 6-21-47	47N	71W	6	SI
542363	Rocky Mountain Gas Inc.	Dunlap No. 6-42-47	47N	71W	6	SI
542364	Rocky Mountain Gas Inc.	Dunlap No. 6-32-47	47N	71W	6	SI
542458	Rocky Mountain Gas Inc.	Dunlap No. 6-31-47	47N	71W	6	SI
541920	Rocky Mountain Gas Inc.	Dunlap No. 7-12-47	47N	71W	7	SI
542746	Rocky Mountain Gas Inc.	Dunlap No. 7-14-47	47N	71W	7	SI
542747	Rocky Mountain Gas Inc.	Dunlap No. 7-24-47	47N	71W	7	SI
529870	Warren E & P Inc.	State No. 12-16	47N	71W	16	SI
542357	Rocky Mountain Gas Inc.	Dunlap No. 18-22-4	47N	71W	18	SI
542358	Rocky Mountain Gas Inc.	Dunlap No. 18-11-4	47N	71W	18	SI

Coalbed Methane Wells (Continued)						
API	Company	Well Name	TWP	RNG	Section	Status
542359	Rocky Mountain Gas Inc.	Dunlap No. 18-12-4	47N	71W	18	SI
542360	Rocky Mountain Gas Inc.	Dunlap No. 18-21-4	47N	71W	18	SI
544551	Loral Operating LLC	Well No. 21-44	47N	71W	21	SI
544555	Loral Operating LLC	Schneider Trust No. 21-43	47N	71W	21	SI
544559	Loral Operating LLC	Well No. 21-42	47N	71W	22	SI
547248	Loral Operating LLC	Schneider Trust No. 22-14C	47N	71W	22	SI
547249	Loral Operating LLC	Schneider Trust No. 22-14	47N	71W	22	SI
547250	Loral Operating LLC	Schneider Trust No. 22-13	47N	71W	22	SI
547251	Loral Operating LLC	Schneider Coal No. 22-13C	47N	71W	22	SI
549588	Loral Operating LLC	Schneider Trust No. 22-23	47N	71W	22	SI
549596	Loral Operating LLC	Schneider Trust No. 22-24	47N	71W	22	SI
547246	Loral Operating LLC	Schneider Trust No. 27-11C	47N	71W	27	SI
547247	Loral Operating LLC	Schneider Trust No. 27-11	47N	71W	27	SI
549589	Loral Operating LLC	Schneider Trust No. 27-24	47N	71W	27	SI
549590	Loral Operating LLC	Schneider Trust No. 27-23	47N	71W	27	SI
549591	Loral Operating LLC	Schneider Trust No. 27-22	47N	71W	27	SI
549592	Loral Operating LLC	Schneider Trust No. 27-21	47N	71W	27	SI
549593	Loral Operating LLC	Schneider Trust No. 27-14	47N	71W	27	SI
549594	Loral Operating LLC	Schneider Trust No. 27-13	47N	71W	27	SI
532026	Lance Oil & Gas Co.	Garrett No. 29-11R	47N	71W	29	SI
530962	Lance Oil & Gas Co.	Garrett No. 32-32	47N	71W	32	SI
549595	Loral Operating LLC	Schneider Trust No. 27-12	47N	71W	27	SP

Supplementary Information on the Affected Environment in the General Analysis Area for the Maysdorf Coal Lease Application Draft Environmental Impact Statement

May 2006

Reclaimed wetland at the Cordero Mine.



**SUPPLEMENTARY INFORMATION ON THE AFFECTED ENVIRONMENT
IN THE GENERAL ANALYSIS AREA FOR THE
MAYSDORF COAL LEASE APPLICATION
DRAFT ENVIRONMENTAL IMPACT STATEMENT**

Prepared by

**WWC Engineering
Sheridan, Wyoming**

Under the Direction of

**U.S. Department of the Interior
Bureau of Land Management
Casper Field 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
Land Quality Division
Cheyenne, Wyoming**

and

**Wyoming State Planning Office
Cheyenne, Wyoming**

May 2006

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INTRODUCTION

This document has been prepared to supplement the information provided in Chapter 3 of the Maysdorf Coal Lease Application EIS¹ (BLM 2006), herein referred to as the Maysdorf EIS document. It is a compilation of detailed information about the existing environmental elements within the general analysis area associated with a tract of federal coal reserves adjacent to the Cordero Rojo Mine, an operating mine in the east-central portion of the PRB in Wyoming. BLM received an application from CMC, operator of the Cordero Rojo Mine in Campbell County, Wyoming, to lease the federal coal included in a maintenance coal tract under the regulations at 43 CFR 3425, Leasing On Application. The tract is referred to as the Maysdorf LBA Tract.

The Proposed Action that BLM is considering in the Maysdorf EIS document is to hold a separate competitive coal lease sale and issue a lease for the federal coal lands included in the Maysdorf LBA Tract as applied for by CMC. The EIS also evaluates two alternative tract configurations identified by BLM for consideration for leasing. BLM is evaluating adding lands to the tract in order to avoid bypassing coal and to increase the potential for competition for the tract. BLM is also considering dividing the tract and offering two separate tracts for sale. Some or all of the same lands would be added to the tract to provide for more efficient recovery of the federal coal, avoid bypassing coal, and increase competitive interest in the Maysdorf LBA Tract.

The general analysis area for the tract includes the tract as applied for, the adjacent lands that BLM is considering adding to the tract, and the anticipated permit amendment study area for the Cordero Rojo Mine (Figure 1). The anticipated permit amendment study area is defined as those lands adjacent to and outside of the applicant mine's current permit area that the applicant anticipates would be contained within the amended mine permit area, which would include portions of the new federal coal lease. Portions of the Maysdorf LBA Tract are contained within the Cordero Rojo Mine's current mine permit area.

The Data Adequacy Standards for the Powder River Coal Region (BLM 1989) provided the basis for describing the individual resources and critical elements of the human environment (BLM 1988) that could potentially be affected if this tract is leased and mined as proposed. This document includes more detailed information about the existing conditions of the physical, biological, and cultural resources in the LBA tract as a supplement to the discussions on corresponding elements of the affected environment that are summarized more briefly in Chapter 3 of the Maysdorf EIS document.

¹ Refer to page xiv of the Maysdorf EIS document for a list of abbreviations and acronyms used in this supplementary information document.

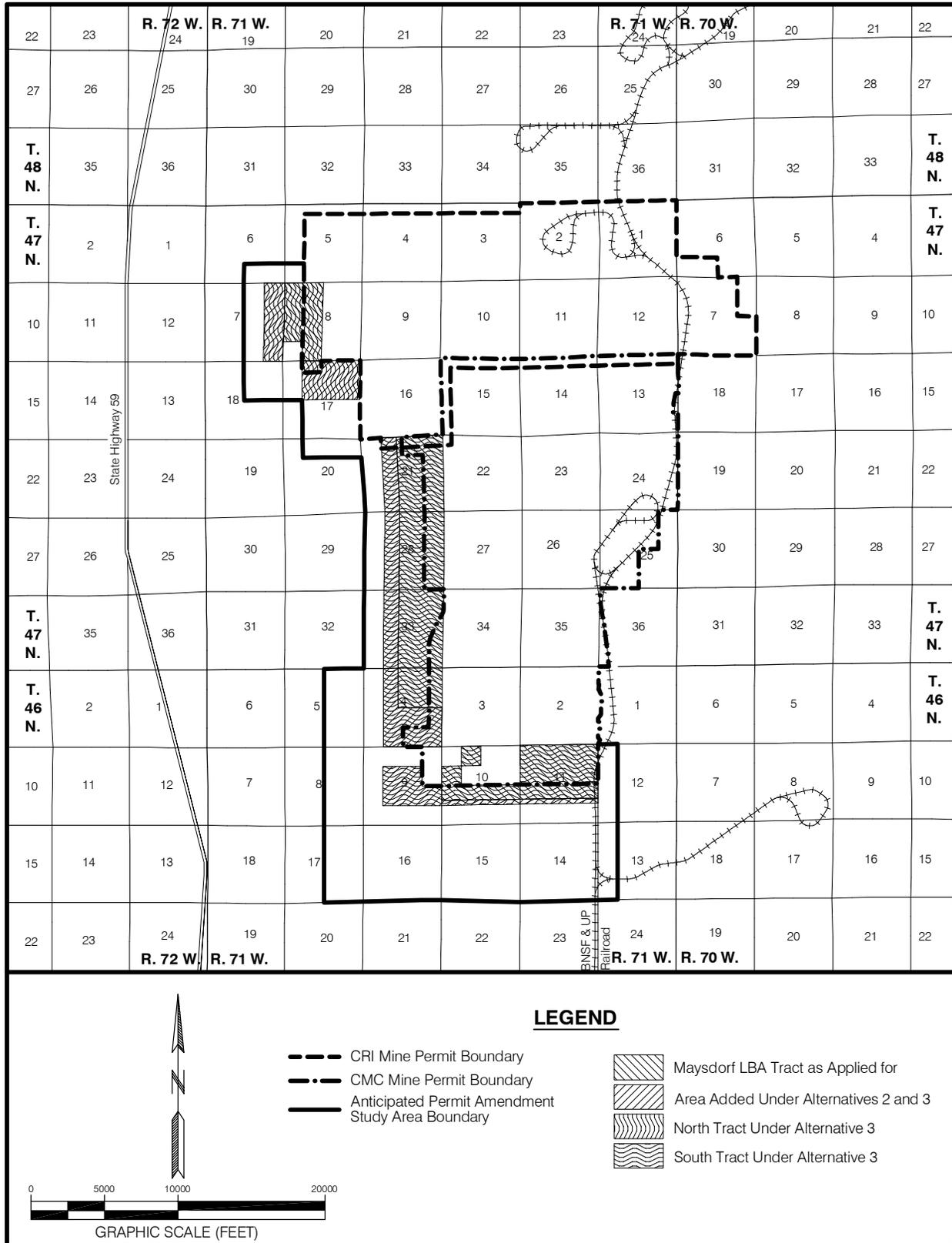


Figure 1. General Analysis Area.

TOPOGRAPHY AND PHYSIOGRAPHY

The Maysdorf LBA Tract is in an area of gently rolling terrain of moderate relief influenced by the Belle Fourche River and its tributary, Caballo Creek. Elevation ranges from 4,520 to 4,700 ft within the LBA tract, from 4,520 to 4,740 ft within the area added under Alternatives 2 and 3, and from 4,510 to 4,770 ft within Cordero Rojo Mine's anticipated permit amendment study area. Within the LBA tract and the area added under Alternatives 2 and 3, slopes range from flat in the Belle Fourche River floodplain to over 40 percent in the adjacent breaks. The breaks are sharp transitions between the bottomlands and the uplands. The slopes of the gently rolling uplands, which comprise most of the LBA tract, seldom exceed 10 percent. A slope analysis would be done for the LBA tract if a lease sale is held and it is proposed for mining.

GEOLOGY

Surficial deposits in the general analysis area include alluvial and eolian deposits, clinker, and weathered Wasatch and Fort Union Formations. Although clinker is present throughout the eastern portion of the general analysis area and the Cordero Rojo Mine's existing permit area, the LBA tract analyzed in this EIS contains no appreciable amounts of clinker. There are thin alluvial deposits along some of the ephemeral stream channels. These alluvial deposits typically consist primarily of poorly to well-sorted, irregularly bedded to laminated sequences of unconsolidated sand, silt, and clay. The valley floor of the Belle Fourche River contains appreciable amounts of alluvium, both in width and depth, and exhibits a complex, well developed terrace and floodplain system. The Belle Fourche River alluvial deposits contain much more coarse-grained material (sands and gravels) than any of the other ephemeral tributaries that drain the general analysis area.

The Eocene Wasatch Formation directly overlies the recoverable coal seam and thus forms most of the overburden in the general analysis area. It consists of interbedded lenticular sandstones, siltstones, shales, and thin discontinuous coals. Typically, units are gradational mixtures of these sediments. There is no distinct boundary between the Wasatch Formation and the underlying Paleocene Fort Union Formation. From a practical standpoint, however, the top of the mineable coal zone is considered as the contact between the two formations. The average overburden thickness in the LBA tract as applied for is about 222 ft, and about 238 ft in the Alternative 2 and Alternative 3 tract configurations. Regionally, overburden thickness generally increases to the west due to the westerly dip (one to three degrees) of the beds in this area. In general, overburden thickness decreases in stream valleys where it has been removed by erosion.

The Fort Union Formation consists primarily of shales, mudstones, siltstones, lenticular sandstones, and coal. It is divided into three members: Tongue

River (which contains the target coal seam), Lebo Shale, and Tullock, in descending order (refer to Figure 3-2 in the Maysdorf EIS document).

The Tongue River Member of the Fort Union Formation consists of interbedded claystone, silty shale, carbonaceous shale, and coal, with lesser amounts of fine-grained sandstone and siltstone.

At the Cordero Rojo Mine and within the Maysdorf LBA Tract, there is one mineable coal seam. The nomenclature of this seam varies according to mine operator. The U.S. Geological Survey (Flores et al. 1999) refers to the thick mineable coals in the Gillette coal field as the Wyodak-Anderson coal zone of the Tongue River Member of the Fort Union Formation. Locally, this coal zone is referred to as either the Wyodak or the Wyodak-Anderson. On the Maysdorf LBA Tract as proposed and the Alternative 2 and Alternative 3 tract configurations, the Wyodak coal seam thickness averages about 62 ft. Up to five noncoal splits or partings occur within the seam and they are typically local, discontinuous lenses of carbonaceous clay or shale that are less than one ft thick.

An east-west trending “no coal” zone is located throughout the central portion of Section 4, T.46N., R.71W. It is postulated (CMC 2004a) that an ancient drainage channel (or paleochannel) eroded and removed the coal and replaced it with unconsolidated fine sand, occasional gravel, and silty clays.

Within the general analysis area, the coal strikes essentially north-south and dips vary from zero to five degrees to the west.

The Fort Union coal seams are subbituminous and are generally low-sulfur, low-ash coals. Typically, the coal being mined has a higher heating value and lower sulfur content south of Gillette than north of Gillette. According to the analyses (which were done on an as-received basis) of exploration drilling samples collected in the LBA tract as proposed, the heating value of the coal is approximately 8,445 Btu/lb and contains an average of 5.1 percent ash, 0.3 percent sulfur, 1.3 percent sodium, and 29.8 percent moisture. According to the analyses of coal samples collected in the Alternative 2 and 3 tract configuration areas, the recoverable coal reserve has an average heating value of approximately 8,470 Btu/lb, with an average of 5.0 percent ash, 0.3 percent sulfur, 1.3 percent sodium, and 29.8 percent moisture.

The Lebo Shale and Tullock Members of the Fort Union Formation consist primarily of sandstone, siltstone, mudstone, shale, and coal. In general, the Tullock Member contains more sand than the Lebo Shale Member.

Table 1 presents the average thicknesses of the overburden and the coal seam for the Maysdorf LBA Tract. Figures 2 and 3 depict four geologic cross sections (two north-south and two east-west) drawn through the Maysdorf LBA Tract.

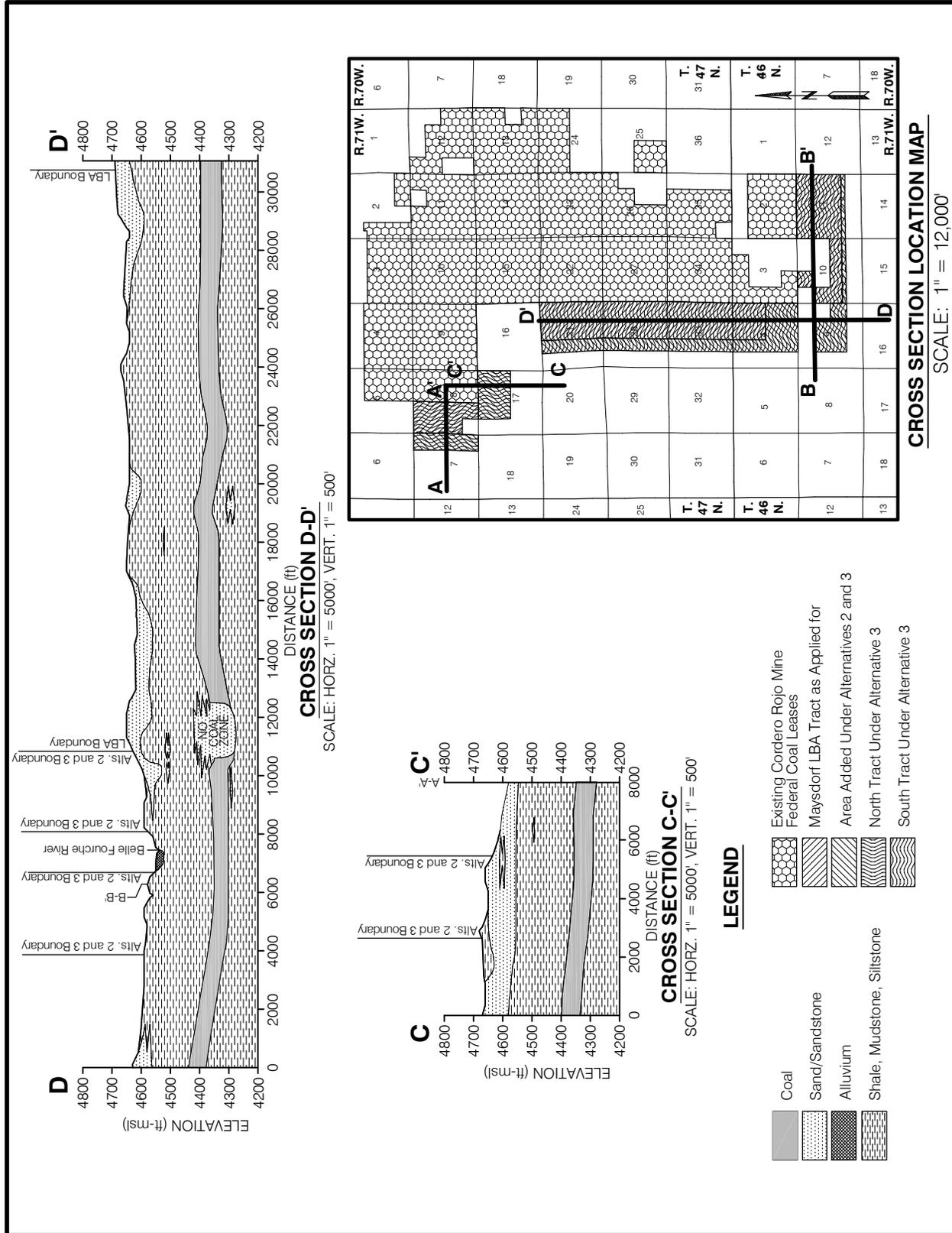


Figure 2. North-South Geologic Cross Sections for Maysdorf LBA Tract.

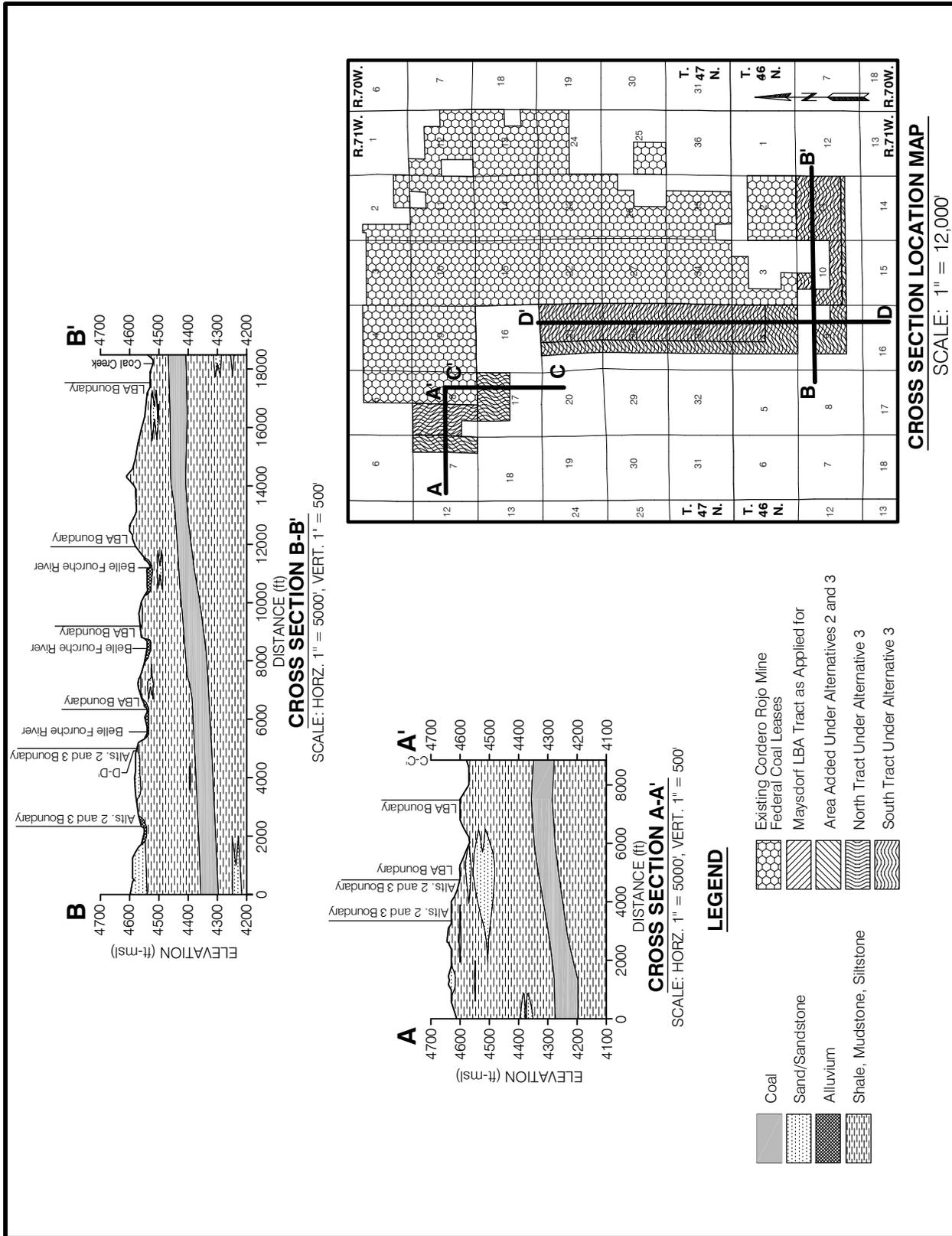


Figure 3. East-West Geologic Cross Sections for Maysdorf LBA Tract.

These cross sections are representative of the geology in the vicinity of the LBA tract.

Table 1. Average Overburden and Coal Thicknesses in the Maysdorf LBA Tract.

Mining Unit	Proposed Action (ft)	Alternatives 2 and 3 (ft)
Overburden	222.0	238.5
Coal	62.1	61.9

PALEONTOLOGY

Erathem-Vanir Geological PLLC (EVG) of Pocatello, Idaho conducted a paleontological evaluation of the Maysdorf general analysis area in June 2005. The evaluation included a pre-field geology and paleontology review and a pedestrian field survey. One of the primary goals of the evaluation was to locate unique localities of fossilized bone, such as those reported elsewhere in the Wasatch Formation of the PRB.

Seven vertebrate fossil localities were identified as a result of the records search in T.46N., R.71W. and T.47N., R.71W. in the Wasatch Formation (Culver 2005, EVG 2001).

Geological mapping by the USGS and WSGS have documented that the general analysis area is underlain by sedimentary deposits of the Eocene Wasatch Formation and Paleocene Fort Union Formation. The paleontological field survey confirmed the presence of Wasatch Formation as the bedrock underlying the general analysis area, as depicted on the published geologic maps. However, surficial deposits of the Fort Union Formation that are mapped along the extreme eastern edge of the general analysis area are not present as outcrops. These deposits probably underlie the alluvial deposits within the Coal Creek valley. The disagreement between what was observed as surface outcrops and that depicted on the geologic maps is the result of those maps depicting bedrock geologic units that would occur at the surface in the absence of recent, unconsolidated surficial deposits. They do not depict surficial deposits such as colluvium that occur widespread over the general analysis area. In addition, actual outcrops of the Wasatch Formation that could be prospected for fossils were infrequent. The only extensive outcrops that were prospected occur in the rough breaks along the south side of the Belle Fourche River in Sections 9, 10, 11, 14, and 15, T.46N., R.71W.

Five fossil localities (two plant, one invertebrate, and two vertebrate) were identified during the field survey. These localities occur in exposures of the Wasatch Formation south of the Belle Fourche River in Sections 9, 10, and 14. These localities occur in the same general vicinity of exposures prospected by EVG in 1999 (EVG 2001) that produced two fossil vertebrate localities. The two plant localities yielded an in-place tree stump preserved in a sandstone outcrop in Section 9 and fragmentary fossil wood associated with a coal in Section 10.

The invertebrate locality yielded fragmentary fossils of the fresh water bivalve *Unio*, preserved in a lag conglomerate at the base of a sandstone outcrop in Section 9. The two vertebrate localities yielded the fragmentary bone and dermal scutes of a crocodile, preserved in a carbonaceous mudstone in Section 10, and a reptilian coprolite, preserved in a carbonaceous mudstone in Section 14. None of this fossil material at these localities is considered to have much scientific significance and as a result no specimens were collected. Vertebrate fossils appear to be very scarce. Fossil wood is much more common and observed at many unrecorded locations, particularly associated with coal outcrops.

Due to the widespread nature of the fossilized plant remains and gastropods in the Wasatch and Fort Union Formations in the PRB, the recording of fossil localities is limited to unique finds. No localities produced exceptional examples and no unique finds were located. Fossil plant and gastropods can be collected elsewhere in the PRB.

AIR QUALITY

Existing Emission Sources

In the vicinity of the Maysdorf LBA Tract, the main sources of air pollution are surface coal mines, vehicle traffic, railroad traffic, and various sources associated with oil and gas production and farming and ranching activities. The closest existing coal-fired power plants to the LBA tract are the Dave Johnston plant (approximately 80 miles south-southwest) and the Wyodak Complex (approximately 15 miles north), which consists of the 90-Mw WyGen No. 1, the 335-Mw Wyodak No. 1, the 21.8-Mw Neil Simpson No. 1, the 80-Mw Neil Simpson No. 2, and two 40-Mw natural gas-fired power plants.

Proposed Emission Sources

All of the currently proposed emission sources in the eastern PRB are discussed in Chapter 4 of the Maysdorf EIS document. There are currently ten pending LBA applications including the Maysdorf tract. Table 2 provides the approximate distances from the Maysdorf LBA Tract to each of the other nine pending LBAs. A coal lease exchange is also pending, which involves the exchange of existing Federal coal leases (called Gold Mine Draw AVF Exchange Tract) underlying a declared AVF for one or more of eight other identified Federal coal tracts. The distances from the Maysdorf LBA Tract to the proposed exchange tracts are included in Table 2.

Table 2. Distances to Pending LBAs.

LBA Tract Name	Adjacent Mine	Distance from Maysdorf LBA Tract
Eagle Butte West	Eagle Butte	20 miles north
Belle Ayr North	Belle Ayr	3 miles north
West Antelope II	Antelope	30 miles south
Hilight Field	Black Thunder	13 miles south
West Hilight Field	Black Thunder	18 miles south
West Coal Creek	Coal Creek	1 mile southeast
Caballo West	Caballo	4 miles north
West Jacobs Ranch	Jacobs Ranch	14 miles south
Hay Creek II	Buckskin	28 miles north
AVF exchange tract #1-4	North Antelope Rochelle	26 miles south
AVF exchange tract #5-6	North Antelope Rochelle	32 miles south
AVF exchange tract #7	Rawhide	23 miles north
AVF exchange tract #8	Caballo	4 miles north

Historical Ambient Air Quality

Particulate Emissions

Emission Producing Activities

Fugitive particulate (dust) emissions are produced within the mine areas by activities such as coal and overburden blasting, excavating, loading, and hauling and large areas of disturbed land. Stationary or point sources of particulate emissions produced within the mine areas include coal crushing, handling/conveying, and storage facilities.

Monitoring Results

WDEQ/AQD requires the collection of information documenting the quality of the air resource at each of the PRB surface coal mines. Each mine was required to monitor air quality for a 24-hour period every six days at multiple monitoring sites through the end of 2001. All PM₁₀ monitors located at the active mines are now required by WDEQ/AQD to sample air quality for a 24-hour period every three days beginning in 2002.

In accordance with the Ambient Air Quality Assurance Project Plan, Cordero Rojo Mine operates a particulate and meteorological monitoring network. Figure 3-4 in the Maysdorf EIS document shows the current locations of the particulate (PM₁₀ and TSP) air quality sampling sites and the meteorological

stations at the Cordero Rojo Mine. Ambient particulate data are collected at three sites: CRC-E, CRC-S, and CRC-W. The network consists of one high-volume TSP sampler (CRC-E) and four low-volume PM₁₀ samplers (CRC-E10, CRC-E10A, CRC-S10, and CRC-W10) with their corresponding satellite samplers (CRC-E10S, CRC-S10S, and CRC-W10S). CRC-E10 and CRCE10A serve as the primary and collocated samplers respectively at the CRC-E site. The State of Wyoming added PM₁₀ based standards in 1989 and retained the TSP standards until March 2000; therefore, the TSP standard is no longer being enforced. Cordero Rojo discontinued monitoring TSP at site CRC-E in 2005.

There were no violations of the TSP standard at the Cordero Rojo Mine when TSP was the federally regulated pollutant, and there have been no violations of the 24-hour and annual average PM₁₀ based standards at the Cordero Rojo Mine since PM₁₀ became the federally regulated pollutant. Table 3 presents the average annual PM₁₀ concentrations measured at the mine's three air quality monitoring sites from 1995 through 2004. In effort to relate measured particulate emissions to mine activity, Cordero Rojo Mine's annual coal and overburden production are included in Table 3.

Table 3. Summary of Cordero Rojo Mine Annual Coal and Overburden Production and Particulate Emissions Monitoring Data, 1995 - 2004.

Year	Coal Produced (mmtpy)	Overburden Yards Moved (mmbcy)	Average Annual PM ₁₀ (µg/m ³)		
			Site CRC-E	Site CRC-S	Site CRC-W
1995	31.4	87.4	11.0	8.0	N/A
1996	28.1	79.0	14.0	12.0	N/A
1997	28.1	54.4	15.0	11.0	N/A
1998	37.0	79.4	15.0	10.0	N/A
1999	45.7	97.9	15.0	10.0	N/A
2000	38.6	102.0	26.0	17.0	N/A
2001	43.5	107.5	24.0	18.0	18.0
2002	38.3	117.5	25.0	16.0	15.0
2003	36.1	116.5	22.1	15.0	15.8
2004	38.8	131.9	22.0	14.0	15.0

Sources: Production data from CMC and WDEQ/AQD (2005c).
Emissions data from EPA (2005a).

Control Measures

The WDEQ/AQD requires the use of BACT on all sources of emissions in the State of Wyoming. CMC practices control measures that are applicable to surface mining operations, which are outlined in Section 14 or the WAQSR.

Fugitive emissions are controlled with a variety of methods that the agency considers BACT. Water trucks are used to apply water and chemical dust suppressants on the mine access road and all haul roads used by trucks and/or scrapers. Haul truck speed limits are imposed to further help reduce fugitive emissions from roads. Emissions are further reduced by the assumption of 100 days of precipitation per year. Limiting the drop height between the shovel bucket and truck bed controls emissions from overburden and coal loading. Best mining practices are used to limit the number and areal extent of overburden blasts. Soil is revegetated, either temporarily or permanently, in a timely manner to help minimize emissions from wind erosion. Fugitive emissions from the coal truck dumps are controlled with stilling sheds. Mine-wide emissions are further reduced by the use of pavement where possible.

Point source emissions from the coal preparation plants (at both the Caballo Rojo and Cordero Mine facilities) are reduced via the use of covered conveyors, telescoping loadout chutes, enclosed storage devices (silos), and dust collectors (baghouses) at all coal transfer points. WDEQ/AQD issued air quality permit MD-1058 on September 17, 2004 to modify operations at the Cordero Rojo Mine with the addition of atomizer/fogger dust control systems that replaced all 14 existing conventional baghouses. This new emission control system will reduce point source particulate emission levels such that the facility is no longer considered a major source as defined by Chapter 6, Section 3 of the WAQSR and therefore no longer required to have a Title V Operating Permit.

NO₂ Emissions

Emission Producing Activities

Vehicular traffic, both inside and outside the areas of mining, is responsible for tailpipe emissions. Exhaust emissions from large-scale mining equipment, emissions from compressor engines used in the production of natural gas, emissions from railroad locomotives, and coal-fired power plant emissions all contain oxides of nitrogen (NO_x). Tailpipe emissions consist primarily of NO₂, CO, and VOCs, but may also include SO₂ and other trace constituents. Overburden blasting also sometimes produces gaseous orange-colored clouds that contain NO₂. NO₂ is one of several products resulting from the incomplete combustion of the explosives used in the blast.

Monitoring Results

NO₂ monitoring results are available from several currently-active air quality monitoring stations in the eastern PRB, including the Thunder Basin National Grasslands Site, located approximately 50 miles north-northeast of the LBA tract; the Campbell County site, located approximately 15 miles west-northwest of the LBA tract; the Tracy Ranch Site, located approximately 24 miles south-southeast of the LBA tract; the Belle Ayr Mine Site, located approximately four miles northeast of the LBA tract; and the Antelope Mine Site, located approximately 33 miles south of the LBA tract. WDEQ/AQD and respective mines maintain these air quality monitoring stations. The monitoring data that have been gathered from these sites, as well as other sites that no longer monitor NO₂ concentration, are included in Section 3.4.3 of the Maysdorf EIS document.

Control Measures

Although there have been no reported events of public exposure to NO₂ from blasting activities at the Cordero Rojo Mine and the WDEQ/AQD has not required the mine to implement any specific measures to control or limit public exposure to NO₂, the mine has voluntarily implemented a program designed to control/limit public exposure to the intermittent, short-term releases of NO₂ that sometimes occur as a result of incomplete combustion of blasting materials. The Cordero Rojo Mine strictly adheres to their self-implemented Environmental Management System, which includes a detailed blasting procedures plan. The plan complies with the blasting plan publication/notification requirements associated with the Permit to Mine issued by WDEQ/AQD. The voluntary measures that have been instituted, particularly when large blasts are planned are listed in Section 3.4.3 of the Maysdorf EIS document.

WATER RESOURCES

Groundwater

The Maysdorf LBA Tract overlies three geologic water-bearing strata that have been or would be directly affected by mining. In descending order, these units are the recent alluvium, the Wasatch Formation overburden, and the Fort Union Formation Wyodak coal seam that will be mined. The underlying, subcoal Fort Union Formation and the Fox Hills Sandstone are utilized for industrial water supply at the Cordero Rojo Mine and other nearby coal mines, but these units are not physically disturbed by mining activities

Recent Alluvium

Within the Maysdorf LBA Tract, alluvial (unconsolidated, stream laid) deposits primarily occupy the Belle Fourche River valley and the lower portions of

tributary draws where they join the river. The Belle Fourche River alluvium consists of recent stream channel deposits and terrace deposits. Recent channel deposits and the lower two of three terraces that are present in the river valley are typified by both lateral and vertical heterogeneity and are generally comprised of gravels, coarse- to fine-grained sands, and local lenses of silty, commonly organic-rich clays. The upper-most terrace is comprised of relatively homogeneous sandy silt and clay deposits. The alluvial materials presently being deposited by the river are clayey and heavy-textured.

The thickness of Belle Fourche River alluvial deposits varies from absent where bedrock is exposed in the stream channel to more than 40 ft. Lesser quantities of alluvium occur in tributaries to the Belle Fourche. The alluvial, colluvial, and playa deposits associated with these dry tributary draws and other minor surface drainages within the LBA tract are generally thin and not laterally extensive enough to be considered aquifers. Saturated alluvium along the Belle Fourche varies from absent (dry from land surface to the top of the underlying overburden) to more than 10 ft thick, and is greatest near the stream channel. Maximum saturation occurs upstream of bedrock outcrops, where surface water and groundwater collect behind the outcrops (CMC 2004a).

Aquifer testing in the field and laboratory indicate that the Belle Fourche River alluvium has a very low hydraulic conductivity within the current Cordero Rojo Mine permit area, ranging from nearly zero to 2.83 ft/day. The testing results verify the low productivity of the alluvial deposits.

Belle Fourche alluvial monitor well water levels indicate that alluvial groundwater flows down-valley, and exhibits a hydraulic gradient similar to that of the valley profile. Recharge to the alluvium is from direct precipitation, stream flow infiltration, and adjacent upland overburden areas. The water table geometry near the stream suggests that the stream generally loses water to the alluvium, but may gain water depending on the season and extent of saturation in the alluvium. Groundwater elevations and flow directions in the undisturbed portion of the Belle Fourche River valley within the southern portion of the Maysdorf LBA Tract have not been impacted by surface coal mining activities (i.e., Belle Fourche River diversion constructed in 1995) to date. The heavy-textured nature of the alluvial aquifer material severely limits groundwater flow down gradient.

In general, the groundwater quality in the saturated Belle Fourche River alluvium within the LBA tract is poor. The alluvial water type is characterized as a sodium/calcium-sulfate with a TDS concentration averaging around 3,900 mg/L. Due to the high salinity, Belle Fourche River alluvial groundwater is considered unsuitable for domestic consumption and irrigation, and marginal for livestock and wildlife use. The alluvial groundwater quality is similar to that of the Wasatch Formation. The low hydraulic conductivities and limited areal extent of saturation indicate that the alluvium does not exhibit aquifer characteristics adequate for agricultural or domestic use. There is currently no

known use of alluvial groundwater in or near the Maysdorf LBA Tract general analysis area.

Wasatch Formation

Within the PRB, the Wasatch Formation (overburden lying above the Wyodak Coal) consists of interbedded sands, silts, and clays with occasional discontinuous deposits of carbonaceous material. This description basically holds true for the Maysdorf LBA Tract. The Wasatch strata range in cohesion from unconsolidated (i.e., loose sands and siltstones) to lithified (sandstones, siltstones, shales, and coal stringers). Any of the deposits may be water bearing, although the sands and sandstones possess a greater, but laterally limited, potential for groundwater yield. These sands are generally discontinuous and separated laterally and vertically by fine-grained deposits. The discontinuous nature of the deposits produces considerable variability in groundwater elevations both laterally and vertically. The hydraulic connection between sandstone lenses is tenuous due to intervening shale aquitards; thus, groundwater movement through the Wasatch Formation overburden is limited. Because the water-bearing units within the Wasatch Formation are not continuous, the Wasatch is not considered to be a regional aquifer.

Water production from the overburden within and around the Cordero Rojo Mine area is low. Isopach maps and geologic cross sections indicate that the sandstone lenses contained in the Wasatch Formation cannot be reliably correlated over the mine's permit area. The formation is also composed of interbedded clays, which tend to isolate water production units.

Another geologic unit that may be considered a part of the Wasatch Formation is scoria, also called clinker or burn. It consists of sediments that were baked, fused, and melted in place when the underlying coal burned spontaneously. These burned sediments collapsed into the void left by the burned coal. Scoria deposits can be a very permeable aquifer and can extend laterally for miles in the eastern PRB. The occurrence of scoria is site specific, typically occurring in areas where coal seams outcrop at the surface. The hydrologic function of scoria is to provide infiltration of precipitation and recharge to laterally contiguous overburden and Wyodak coal beds. Clinker outcrop areas occur along the Cordero Rojo Mine's eastern permit boundary. No scoria deposits are present within the Maysdorf LBA Tract.

Recharge to the Wasatch Formation is from the infiltration of precipitation and lateral movement of water from adjacent scoria bodies. Regionally, groundwater is discharged from the Wasatch Formation by evaporation and transpiration, by pumping wells, by drainage into mine excavations, and by seepage into the alluvium along stream courses. Overburden in the vicinity of the LBA tract is recharged naturally by precipitation infiltration and infiltration of surface water runoff stored in playa areas. Additional, artificial recharge occurs where reservoirs have been constructed for ranching operations, and

where CBNG groundwater is discharged to the surface. CBNG-produced groundwater has been discharged to a low-lying playa area located in the western half of Section 21, T.47N., R.71W., at the western edge of the LBA tract, and has possibly enhanced recharge to the overburden in that area. Overburden groundwater is not generally connected to the underlying Wyodak coal seam due to a low-permeability stratum at the base of the overburden, which is fairly widespread in the general analysis area. However, there is likely some leakage between the aquifers that provides vertical recharge to the coal aquifer.

For the Wasatch Formation as a whole in the PRB, the discontinuous nature of the water bearing units results in low overall hydraulic conductivity and low groundwater flow rates. Because of the varied nature of the aquifer units within the Wasatch, hydraulic properties are variable as well. Martin et al. (1988) reported that hydraulic conductivities within the Wasatch ranged from 10^{-4} ft/day to 10^2 ft/day, and the geometric mean hydraulic conductivity based on 203 tests was 0.2 ft/day. The geometric mean hydraulic conductivity from 70 aquifer tests using wells completed in sandstone in the Wasatch overburden was 0.35 ft/day, while that from 63 aquifer tests using wells completed in siltstone and claystone in the Wasatch overburden was 0.007 ft/day (Rehm et al. 1980). Field aquifer tests within and adjacent to the Cordero Rojo Mine indicate that the water-bearing Wasatch strata typically have a low hydraulic conductivity, with a range of roughly two orders of magnitude (0.03 to 3.3 ft/day); with locally higher values being associated with higher sand fractions relative to the low-permeability silts and clays that make up the majority of the overburden. Aquifer testing also verified that the overburden sands are typically isolated hydraulically from one another (CMC 2004a).

Premine saturated thicknesses in the overburden ranged from near zero in the eastern part of the Cordero Rojo Mine permit area to more than 200 ft in the western portions of the Maysdorf LBA Tract as applied for. Due to the discontinuous nature of the deposits, premine overburden groundwater movement generally followed the topography. Before mining, overburden groundwater flow in the vicinity of the Cordero Rojo Mine was generally toward, and discharged to, the Belle Fourche River and Caballo Creek valleys. Groundwater flow has since been affected in the mine area by the removal of overburden, and west and south of the mine by dewatering operations. Monitor well data indicate that overburden groundwater in the Maysdorf LBA Tract general analysis area now flows toward the mine; however, water levels in overburden monitoring wells located more than 500 ft from the pit have shown no significant decline and any changes are generally only in response to seasonal fluctuations. Currently, overburden groundwater levels in the Cordero Rojo Mine area vary from approximately six to over 160 ft below land surface. Discharge from the overburden still occurs in limited areas to the alluvium in the southern portion of the LBA tract along the Belle Fourche River.

Water quality in the Wasatch Formation near the Maysdorf LBA Tract is extremely variable, but generally poor. The shallow sand zones are found to have higher concentrations of TDS and the water quality tends to improve with depth. TDS concentrations range from approximately 525 mg/L to 9,600 mg/L and the water type is characterized as a calcium/magnesium-sulfate. The water is considered unsuitable for domestic consumption and irrigation, but suitable for livestock and wildlife use. According to SEO records, excluding wells for industrial and mining use, and based on depth of completion, there are 83 wells within three miles of the Maysdorf LBA Tract general analysis area that are completed in the overburden: 15 for domestic use only, 23 for domestic and/or stock use, and 45 for stock use only.

Wyodak Coal

The Tongue River Member of the Fort Union Formation contains the Wyodak coal seam, which is often divided by partings that separate it into two or more units. The separate units are given local names that vary from mine to mine (e.g., Upper and Lower Wyodak or Anderson and Canyon seams). Only local, discontinuous carbonaceous shale partings, typically less than one foot thick, occur in the Maysdorf LBA Tract general analysis area; therefore, the Wyodak coal seam is considered a single aquifer. A general discussion of the coal seam aquifer is presented as follows.

Due to its continuity, the Wyodak coal seam is considered a regional aquifer because it is water bearing and is laterally continuous throughout the area. Hydraulic conductivity within the Wyodak coal seam is highly variable and reflective of the amount of fracturing the coal has undergone, as unfractured coal is virtually impermeable. Field tests indicate that the coal has a low to moderate transmissivity with a range of roughly three orders of magnitude, with localized zones of moderately high transmissivity due to increased fracturing. The yield of groundwater to wells and mine pits is smallest where the permeability of the coal is derived primarily from localized unloading fractures. These fractures, which are the most common, are created by the expansion of the coal as the weight of overlying sediments is slowly removed by erosion. The highest permeability is imparted to the coal by tectonic fractures. These are through-going fractures of areal importance created during deformation of the Powder River structural basin. The presence of these fractures can be recognized by their linear expression at the ground surface, controlling the orientation of stream drainages and topographic depressions. Due to their pronounced surface expression, these tectonic fractures are often referred to as “lineaments”. Coal permeability along lineaments can be increased by orders of magnitude over that in the coal fractured by unloading only. Such increased aquifer transmissivity occurs west of the Cordero Rojo Mine area, and is attributed to structural development that has produced additional fracturing.

Field aquifer tests conducted by CMC in the vicinity of the Maysdorf LBA Tract indicate that the coal aquifer is non-homogeneous and generally low in transmissivity with some local areas of high transmissivity. Hydraulic conductivity values reported for the Wyodak coal seam within the Cordero Rojo Mine permit boundary range from 0.03 to 19.0 ft/day, with a mean of approximately 4.0 ft/day (CMC 2004a and CRI 2002). Storage coefficients measured within and around the Cordero Rojo Mine area range from 10^{-3} to 10^{-4} , indicative of a confined aquifer.

Recharge occurs principally by infiltration of precipitation in the clinker outcrop areas along the Cordero Rojo Mine's eastern permit boundary. Secondary vertical recharge from the overburden also occurs. Prior to mining, the direction of groundwater flow within the coal aquifer was generally from recharge areas westward into the basin, following the dip of the coal. Groundwater conditions varied from unconfined to confined depending on the coal elevation and proximity to outcrop, and the coal was unsaturated in some portions of the Cordero Rojo Mine permit area.

Site-specific water-level data collected from monitoring wells by CMC and other Gillette area coal mining companies and presented in the GAGMO 20-year report (Hydro-Engineering 2001) indicate that the groundwater flow directions in the Wyodak coal have been greatly influenced by surface mine dewatering and groundwater discharge associated with CBNG development. Near active mining areas, groundwater flow within the coal aquifer is typically toward the mine pits. Cordero Rojo Mine development began in 1976 and gradual water level declines recorded prior to 1997 were likely due to mine dewatering alone. By year 2000, groundwater level decline rates had dramatically increased because drawdown caused by widespread CBNG development west of the mine was overlapping with drawdown caused by mining operations. A continuous cone of depression existed around the Caballo, Belle Ayr, 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 (Hydro-Engineering 2001).

Monitoring wells located within one mile west of the Cordero Rojo Mine pits in 2000 had recorded less than 100 ft of historical drawdown. However, monitoring wells located at least three miles west of the mine pits had recorded total drawdowns of 150 ft or more. Near State Highway 59, which was four to five miles west of the mine pits in 2000, approximately 180 ft of drawdown had occurred (Hydro-Engineering 2001). As of 2003, minimal additional drawdown had occurred within one mile west of the advancing pits, although an additional 60 to 80 ft of drawdown had occurred in the vicinity of Highway 59 (Hydro-Engineering 2004). By May 2005, dewatering by mining and CBNG development had lowered the Wyodak coal aquifer's groundwater level to around 40 ft above the base of the seam within the Maysdorf LBA Tract. The

direction of groundwater flow within the LBA tract is now predominantly to the west rather than east, toward the Cordero Rojo Mine's excavations.

Within the general analysis area, Wyodak coal groundwater quality is generally poor, but exhibits lower TDS concentrations than alluvial or overburden groundwater. The composition of groundwater in the coal is generally characterized as a calcium/magnesium-sulfate type near the scoria outcrop recharge areas and transitions to a sodium-bicarbonate type as the groundwater moves downgradient. TDS concentrations range from around 600 mg/L to 4,400 mg/L, and average approximately 1,700 mg/L. Coal groundwater commonly exceeds many suitability criteria for domestic uses and has a high salinity and sodium hazard, which makes it unsuitable for agricultural uses. Therefore, coal groundwater is typically only suitable for livestock and wildlife watering purposes.

Subcoal Fort Union Formation

The Fort Union Formation is divided into three members: The Tongue River Member, the Lebo Member, and the Tullock Member. The Wyodak Coal occurs within the Tongue River Member. The subcoal Fort Union Formation consists primarily of lithified sands and shales, and is divided into three hydrogeologic units: the upper Tongue River aquifer, the Lebo confining layer, and the Tullock aquifer (Law 1976). Of the three units, the Tullock is the most prolific in terms of groundwater yield.

Mining does not directly disturb the hydrogeologic units below the Wyodak 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 2001b). The upper Tongue River aquifer consists of lenticular, fine-grained shale and sandstone. The Lebo confining layer is typically more fine-grained than the other two members and generally retards the movement of water (Lewis and Hotchkiss 1981). The Lebo confining layer typically separates the Tongue River and Tullock aquifers hydraulically. The Tullock aquifer consists of discontinuous lenses of sandstone separated by interbedded shale and siltstone.

Transmissivity is equal to an aquifer's hydraulic conductivity, or permeability, times its thickness, and is commonly used when discussing the hydraulic properties of the subcoal Fort Union Formation, where wells are completed by exposing many discrete sand lenses to the well bore. Transmissivities are generally higher in the deeper Tullock aquifer than in the upper Tongue River aquifer, and many mines in the PRB have water-supply wells completed in this interval (Martin et al. 1988). The City of Gillette also utilizes the Tullock aquifer to meet part of its municipal water requirements. The average transmissivity for the Tullock, as reported by OSM (1984), is 290 ft²/day.

The water quality of the subcoal Fort Union Formation is generally good. TDS concentrations measured in various subcoal Fort Union Formation water supply wells in the eastern PRB range from 230 mg/L to 520 mg/L. Water from the subcoal Fort Union Formation is of the sodium- bicarbonate type. This water is generally suitable for domestic use and may be suitable for livestock and wildlife watering, as well as irrigation, depending upon TDS concentrations and site-specific SAR values.

According to SEO records, excluding wells for industrial and mining use, and based on depth of completion, there are 18 wells within three miles of the Maysdorf LBA Tract that are completed in the sub-coal Fort Union Formation: five for domestic and stock use, and 13 for livestock-only use. CMC uses four wells completed in this formation (Rojo No. 1, Rojo No. 2A, PW-24-1-P, and PW-24-2-P) to supply water for human consumption and mining operations. The depths of these industrial water supply wells range from 988 to 2,034 ft.

Lance Formation-Fox Hills Sandstone

Underlying the Fort Union Formation is the Lance Formation of Cretaceous age. The Lance Formation is comprised of an upper confining layer and a lower aquifer. In Wyoming, the lower Lance Formation is also called the Fox Hills Sandstone. The lower Lance, or Fox Hills Sandstone is described as a well-developed, fine- to medium-grained, marine sandstone that contains thin beds of sandy shale and averages around 670 ft thick.

Cordero Rojo Mine's industrial water supply well PW-23-1 is completed in the Fox Hills Sandstone. This well is 4,130 ft deep and permitted to pump 375 gpm. According to chemical analyses, water from this well is potable, although it is used for dust suppression and other miscellaneous uses. Should the need for additional potable water be realized, it could be incorporated into the mine's potable water system.

Surface Water

The Cordero Rojo Mine site is situated near the center of the PRB, which is a broad structural trough that lies between the Big Horn Mountains and the Black Hills. The PRB is drained by three separate drainage systems: the Powder/Little Powder, the Cheyenne, and the Belle Fourche Rivers. Lying between the Powder River and Cheyenne River drainage basins is the Belle Fourche River drainage system, which is a narrow, linear-shaped basin extending from the Pumpkin Buttes northeast to the Black Hills. The topography of the Belle Fourche drainage basin is typified by broad, flat, inter-stream uplands and a wide, level expanse of eastward-sloping plains broken by a few isolated buttes. The Belle Fourche River and its tributaries drain the existing Cordero Rojo Mine permit area and Maysdorf general analysis area. The permit area is located primarily along the north side of the Belle Fourche River. In this area, the narrow, shallow channel of the river meanders through

a looping, one-half mile wide floodplain. Surface water features in the Maysdorf LBA Tract and the surrounding areas prior to all mining disturbance are displayed in Figure 4.

The Maysdorf LBA Tract consists predominantly of gently rolling topography, although the southern portion is dissected by the Belle Fourche River bottomlands and breaks. The Belle Fourche River flows roughly east-northeast through the southern portion of the tract and is currently diverted from its natural channel in this area to facilitate mining within the existing Cordero Rojo Mine permit area. The diversion channel was constructed in 1995. The diversion begins within the LBA tract area, near and parallel to the northern edge of Section 11, T.46N., R.71W., then extends to the north-northeast into the mine's existing permit area, across most of Section 2, T.46N., R.71W., where it rejoins the natural channel. Another channel diversion was constructed in 1977 in Sections 25 and 26, T.47N., R.71W. as part of the mine's railroad spur and loop construction. Both of these diversions are shown in Figure 4.

Between the point at which the Belle Fourche River enters the Alternative 2 and 3 tract configuration area (in the NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 9, T.46N., R.71W.), to the existing channel diversion (in the NW $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 11, T.46N., R.71W.), the channel thalweg spans approximately 20,000 ft and drops in elevation about 20 ft. The channel gradient of this span is approximately 0.001 (or 5.3 ft per mile), typical for the Belle Fourche River in the region. Outcrops of bedrock in the stream channel break the channel profile into a series of shallow steps, effectively creating pools adjacent to and upstream of the steps.

Caballo and Coal Creeks, which are located north and southeast of the tract, respectively, both discharge to the Belle Fourche River. Caballo Creek flows easterly toward the Belle Fourche River about 1.5 miles north of the tract, and is currently diverted by the Belle Ayr Mine operation. Caballo Creek flows into the Belle Fourche River in Section 3, T.47N., R.70W. Coal Creek flows northwesterly toward the southern portion of the LBA tract and joins the Belle Fourche River near the end of the diversion channel in Section 2, T.46N., R.71W. The eastern edge of Section 11, T.46N., R.71W., in the southern portion of the LBA tract, coincides with the Coal Creek channel for about 1,000 ft. (Figure 4).

All streams, including the Belle Fourche River, within and adjacent to the tract are typical for the region, in that flow events are ephemeral. Stream runoff is typically of short duration and exhibits temporal patterns similar to precipitation events. All streams in the region show the characteristic extreme low-flow period from October through January. Flow events frequently result from snowmelt during the late winter and early spring. Although peak discharges from such events are generally small, the duration and therefore the percentage of annual runoff volume can be considerable. During the spring, general storms (both rain and snow) increase soil moisture; hence decreasing infiltration capacity, and subsequent rainstorms can result in both large runoff

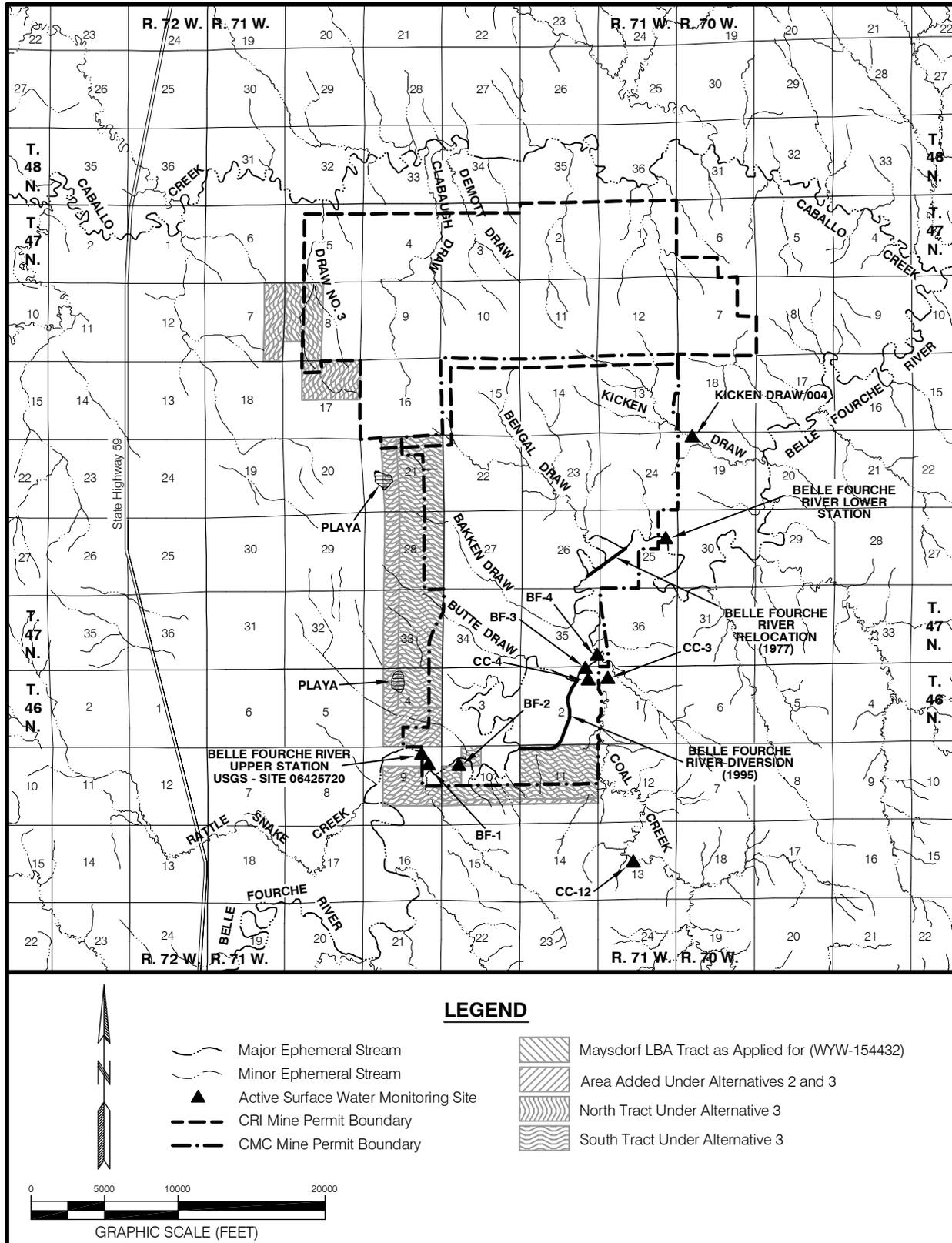


Figure 4. Surface Water Features Within and Adjacent to the Maysdorf LBA Tract.

volumes and high peak discharges. Limited portions of the Belle Fourche River do receive recharge from bank storage (groundwater stored in the alluvium along the stream channel) making the stream locally intermittent.

The central and southern portions of the tract are drained by several shallow, first order tributaries of the Belle Fourche River, while the northern portion of the tract is drained by a few first order tributaries that flow north to Caballo Creek. Two areas on the tract do not drain toward any stream: roughly a 30-acre playa formed by a natural topographic depression exists in the northern portion of Section 4, T.46N., R.71W., and roughly a 40-acre playa formed by a natural topographic depression exists in the west-central portion of Section 21, T.47N., R.71W. (Figure 4).

Long-term streamflow records collected by the USGS on the Belle Fourche River near Moorcroft, Wyoming indicate an average discharge of about 16,700 ac-ft per year, ranging from 825 ac-ft in 1961 to about 98,300 ac-ft in 1978. Streamflow at USGS Station 06425720 (located in the NE $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 9, T.46N., R.71W., and depicted on Figure 4) was monitored continuously from 1975 to 1983, and then discontinued until 2001 when monitoring was reestablished. According to streamflow records from 1975 to 1983, the river at this gaging station did not flow throughout most of the year except in direct response to snow melt and precipitation runoff events. The annual mean streamflow during that period ranged from 0.19 to 9.82 cfs. More recent streamflow records, from 2001 to date, indicate that the mean annual streamflow of the Belle Fourche River at this location is normally less than five cfs, with greater, episodic flows occurring during heavy precipitation and snow-melt events. In response to surface discharge of groundwater associated with CBNG production upstream of this monitoring station, which is a relatively recent phenomenon, streamflow occurrence is now more frequent and consistent. In contrast to the infrequent nature of streamflow events that were recorded at Station 06425720 from 1975 to 1983, the Belle Fourche River at this location is now seldom completely dry. However, the mean annual streamflow rate and annual discharge volume have not significantly increased, indicating that pre-CBNG development conditions prevail. Discharge volumes for 2002 and 2003 (the most recent period of record with a complete year's-worth of data) were 1,600 and 1,860 ac-ft, respectively.

The Belle Fourche River is listed in the WDEQ/WQD Surface Water Classification List as a Class 2AB stream that is protected for drinking water, aquatic life (classified as a warm water fishery), recreation, wildlife, agriculture, industry and scenic value. However, the numeric human health criteria for iron and manganese do not apply to Class 2 waters in the Belle Fourche River drainage and the main stem of the river (WDEQ/WQD 2005). All other ephemeral streams draining the existing permit area and LBA general analysis area are categorized as Class 4 streams.

Springs are uncommon in the general analysis area and have not been identified in the Belle Fourche River valley. A few springs have been observed

in upper terrace areas, but yield negligible flow that does not contribute directly to the Belle Fourche River.

Six reservoirs used for livestock water are located in the tract, all of which are in T.47N., R.71W. Two reservoirs are located on Draw No. 3, which drains north into Caballo Creek: one is in the SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 8, (0.41 acres), and the other is in the SE $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 8 (0.19 acres). One stock reservoir is located on Bengal Draw, which drains south into the Belle Fourche River, in the NW $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 21 (0.27 acres). Two stock reservoirs are located on Butte Draw, which drains south into the Belle Fourche River: one is in the NE $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 33 (0.25 acres), and the other in the SW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 28 (0.14 acres). None of the existing reservoirs has estimated storage capacities of more than two acre-feet.

Water quality in the Belle Fourche River was measured by the USGS at Station 06425720 between November 1975 and April 1983, and from March 2001 to the present. In compliance with WDEQ/LQD permit monitoring requirements, CMC collects water quality samples from the Belle Fourche River at both the Upper and Lower Stations (Figure 4) on a quarterly frequency. Based on these historical water quality analyses, water from the Belle Fourche River is typically a sodium/calcium-sulfate type with TDS concentrations normally ranging around 2,000 to 3,000 mg/L. Surface water quality is usually unsuitable for domestic use, marginal for irrigation, and suitable for livestock and wildlife use. Total iron and manganese concentrations are significantly high in relation to domestic water use, although these metal concentrations coincide with increases in TSS concentrations.

Surface water quality typically varies with flow and/or season. In general, as streamflow increases, TDS concentration decreases, while TSS concentration increases. Conversely, as streamflow decreases, the TDS concentration increases, while the TSS concentration decreases. Due to the sparse vegetative cover and the infrequent occurrence of surface runoff in this semi-arid environment, high TSS concentrations can be expected, especially from floods caused by thunderstorms.

Water Rights

Currently, mining companies and methane development companies hold the majority of the water rights in the general analysis area. Wyoming SEO data indicate that, as of March 8, 2005, there were 2,702 permitted water wells within three miles of the Maysdorf LBA Tract as applied for under the Proposed Action and Alternatives 2 and 3, of which 2,034 are owned by coal mining companies. The other 668 non-coal mine related, permitted water wells, which include 488 wells permitted for uses related to CBNG development, are permitted for the following uses:

- 278 CBNG only
- 122 livestock and CBNG

- 66 livestock only
- 36 miscellaneous and CBNG
- 29 domestic and livestock
- 21 industrial
- 21 miscellaneous
- 20 livestock, miscellaneous, and CBNG
- 16 domestic
- 16 miscellaneous, dewatering, and CBNG
- 15 miscellaneous, livestock, and CBNG
- 13 monitoring
- 3 industrial and miscellaneous
- 2 miscellaneous and livestock
- 2 livestock and miscellaneous
- 1 CBNG and livestock
- 1 dewatering, reservoir, and industrial
- 1 miscellaneous and domestic
- 1 livestock and industrial
- 1 livestock and irrigation
- 1 livestock, irrigation, and domestic
- 1 livestock, miscellaneous, and domestic
- 1 temporary, industrial, and drilling

Approximately 32 percent of the wells are permitted for stock watering, 14 percent are permitted for miscellaneous use, 42 percent are permitted for CBNG development, four percent are permitted for industrial uses, and seven percent are permitted for domestic uses. Other uses amounted to approximately two percent. Most of these wells have been permitted for multiple uses.

As of March 8, 2005, there were 201 non-coal mine related, permitted surface water rights within the search area. These surface water rights are permitted for the following uses:

- 76 livestock
- 63 temporary industrial
- 22 irrigation
- 15 temporary industrial drilling
- 9 livestock and fisheries
- 8 temporary oil production and drilling
- 4 irrigation and domestic
- 3 temporary industrial miscellaneous
- 1 temporary oil production/drilling and miscellaneous

According to SEO records, there are no permanent withdrawals from the Belle Fourche River within three miles of the Maysdorf LBA Tract. The six SEO permits within three miles of the tract that are for non-mining withdrawals from the river are designated as temporary and for drilling use.

ALLUVIAL VALLEY FLOORS

Portions of the Belle Fourche River and its associated ephemeral tributaries within the existing Cordero Rojo Mine permit boundary (including a portion of the Maysdorf LBA Tract) and portions of Caballo Creek within the existing Belle Ayr Mine permit boundary (north of the Maysdorf LBA Tract) have been investigated for the presence of AVF's (Foundation Coal West, Inc. 2003, CMC 2004a, and CRI 2002).

Three separate areas along Caballo Creek north of the Maysdorf LBA Tract have been identified as AVFs (Figure 5). One flood-irrigated hay meadow in Sections 35 and 36, T.48N., R.71W. was determined to be an AVF with possible significance to agriculture. A majority of this AVF area is within the original Belle Ayr Mine permit boundary, which was permitted pre-SMCRA. Since the WDEQ/LQD mine permit to affect the AVF was issued prior to 1977, the effective date of SMCRA, the AVF can be disturbed during mining but must be restored as part of the reclamation process (Foundation Coal West, Inc. 2003). A second area along Caballo Creek, located in Sections 32 and 33, T.48N., R.71W. and Section 5, T.47N., R.71W., was determined to be an AVF not significant to agriculture in 1982. This AVF also lies within the Belle Ayr Mine permit boundary. The remnants of an irrigation ditch was discovered in 1993 that had the capability of artificially flood irrigating 3.9 acres of T2 terrace along Caballo Creek, just west of this designated AVF. As a result, these 3.9 acres were added to the area of this AVF. The additional area is not significant to agriculture (Foundation Coal West, Inc. 2003). An AVF study was conducted in 1996 by the Belle Ayr Mine to determine the presence of potential AVFs west of that mine's original AVF study area. As a result of that study, WDEQ/LQD determined a third area along Caballo Creek in Section 1, T.47N., R.72W., Section 31, T.48N., R.71W., and Section 36, T.48N., R.72W. to be an AVF (Figure 5). This area is not significant to farming (Foundation Coal West, Inc. 2003).

The reach of Belle Fourche River and its associated ephemeral tributaries within and adjacent to the existing Cordero Rojo Mine permit boundary have also been investigated for the presence of AVFs (CMC 2004a). WDEQ/LQD determined that the valleys of Kicken and Bengal Draws, Coal Creek, and Belle Fourche River in the vicinity of the Cordero Rojo Mine are not AVFs because they are not capable of supporting subirrigation or flood irrigation agricultural activities (WDEQ/LQD 2004a). CMC determined that alluvial underflow does not exist over long reaches or at significant rates along the Belle Fourche River. Baseline studies determined that there is an insignificant amount of groundwater in storage in the unconsolidated deposits of the Belle Fourche River and that subirrigation is confined to a very narrow area adjacent to the channel and the numerous natural pools in the channel (CMC 2004a).

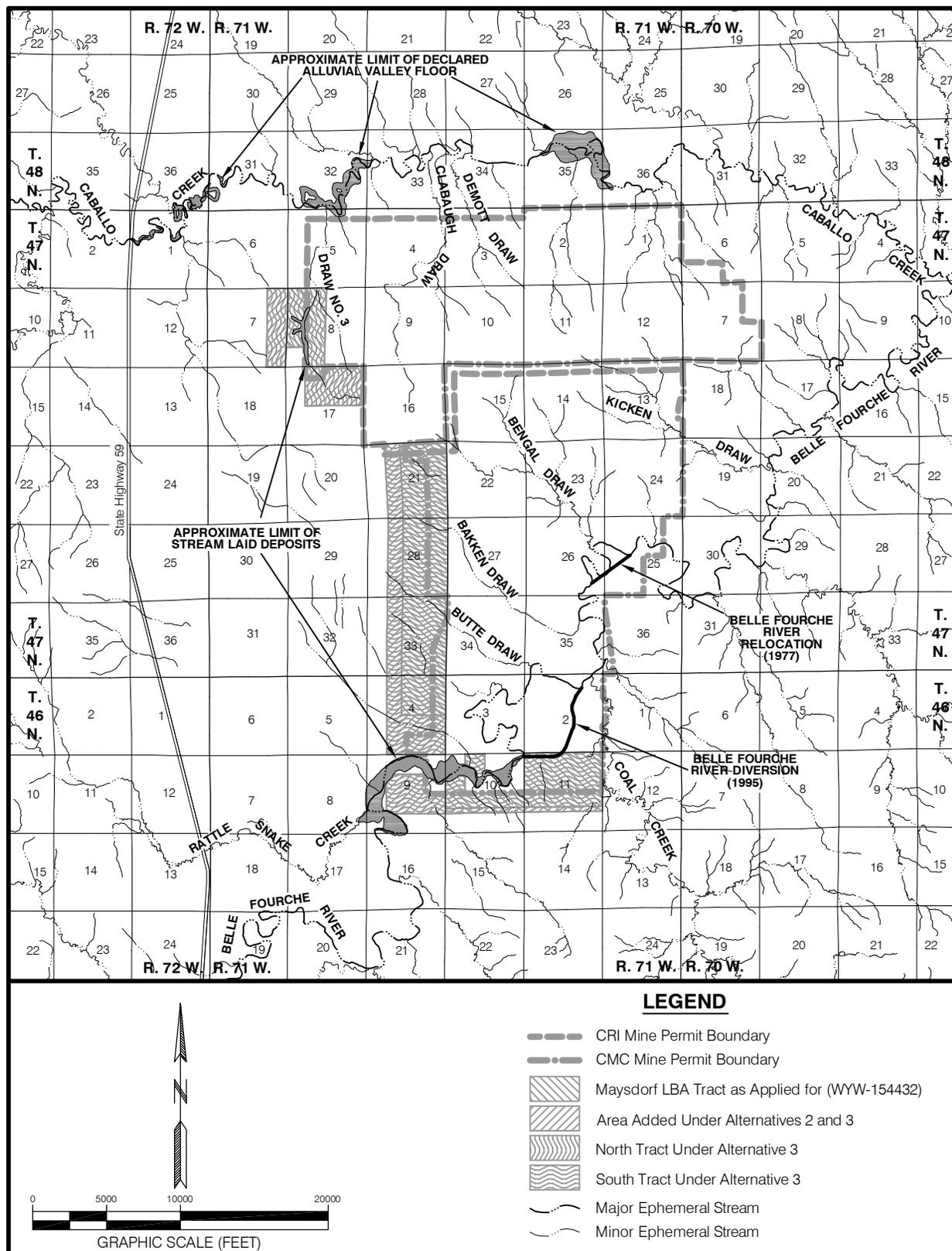


Figure 5. Declared Alluvial Valley Floors and Stream Laid Deposits Within and Adjacent to the Maysdorf LBA Tract.

CMC is currently conducting preliminary investigations along the Belle Fourche River and within its associated ephemeral draws to determine if AVFs are present within the southern portion of the Maysdorf LBA Tract. These studies include mapping of stream laid deposits, evaluations of groundwater availability and quality, assessment of subirrigated land, and evaluations of natural and flood irrigation. The Belle Fourche River is considered an impractical water source for artificial flood irrigation practices due to poor water quality and infrequent water availability. Historically, flood irrigation attempts have not been identified along the Belle Fourche or ephemeral drainages within the general analysis area and all lands within the LBA tract are considered undeveloped rangeland.

Figure 5 depicts the approximate limits of unconsolidated stream laid deposits, as mapped by the USGS within and adjacent to the Maysdorf LBA Tract. CMC is currently mapping the extent of unconsolidated deposits along the Belle Fourche River to provide a detailed characterization of the alluvium. Further AVF studies by CMC on the Belle Fourche River upstream of Cordero Rojo Mine's current AVF investigations will be part of the mine permitting process if the lease sale is held and the Maysdorf LBA Tract is proposed for mining. Specific declarations of the presence or absence of AVFs on the LBA tract will then be made by the WDEQ/LQD.

The Cordero Rojo Mine is required to monitor impacts to downstream AVFs by measuring discharges from sediment ponds for quantity and quality. The mine is also required to restore the essential hydrologic functions of any affected AVFs, if delineated, and preserve the hydrologic functions of the AVFs on adjacent lands. WDEQ/LQD does not believe that the Cordero Rojo mining operation will result in any material damage to the any AVFs downstream of the current Cordero Rojo mine, and that reclamation will replace the alluvial materials and restore the hydrologic function of the Belle Fourche River (WDEQ/LQD 2002, 2004).

There is no present or historical record of agricultural use, other than undeveloped rangeland, of the stream laid deposits within the general analysis area. If WDEQ/LQD determines that an AVF is present on the LBA tract, it is reasonable to assume that mining would be permitted in those areas because the lack of agricultural development in this area precludes a determination of significance to agriculture.

WETLANDS

Jurisdictional wetland inventories were completed in 2005 by CMC on lands contained within the analysis area. The area investigated is located within, west, and south of the current Cordero Rojo Mine permit area and includes the Maysdorf LBA Tract as applied for, the lands added under Alternatives 2 and 3, and a ¼-mile disturbance buffer. Figure 6 depicts the wetland analysis area. Wetland data produced and distributed by the USFWS's NWI mapping project

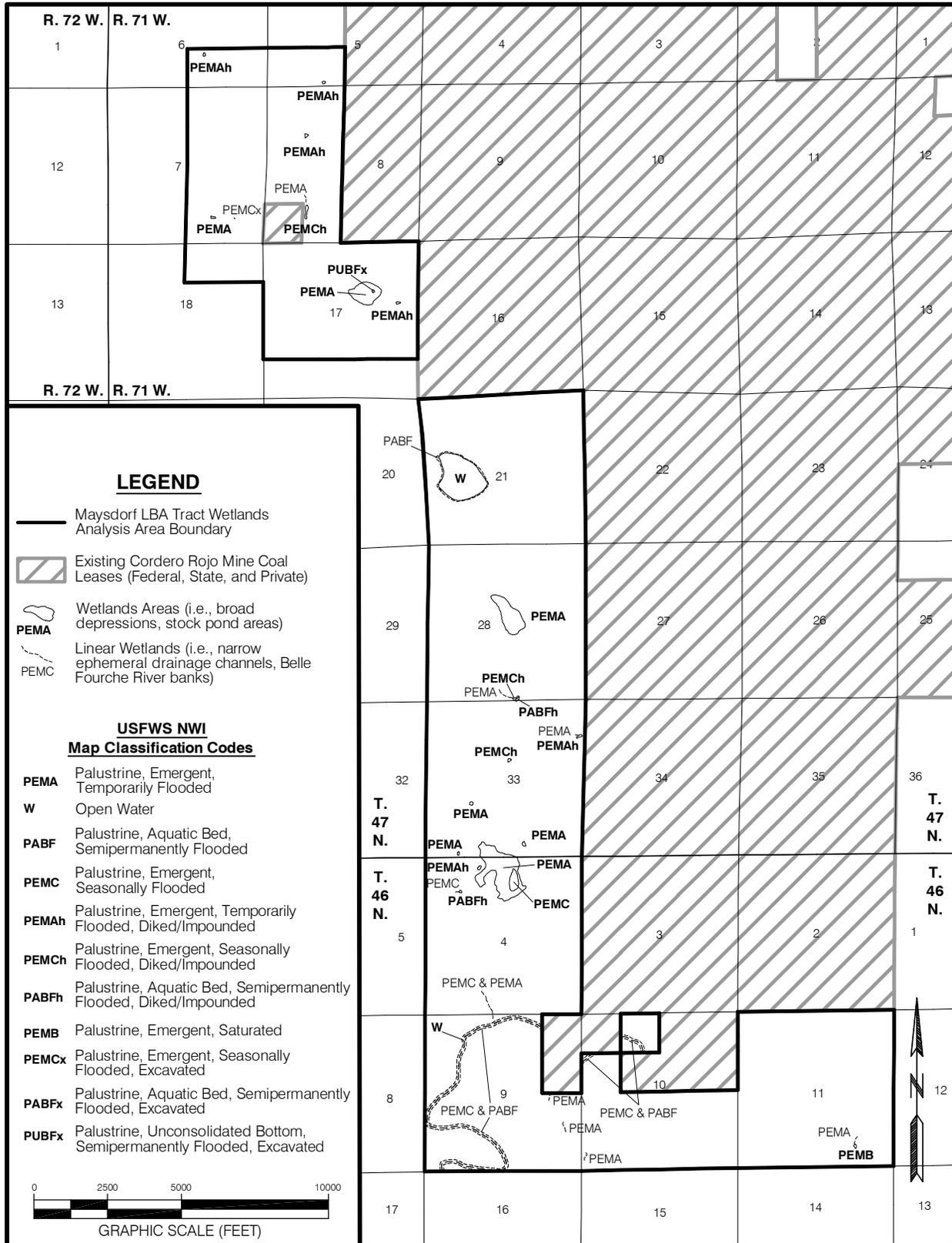


Figure 6. Wetlands Within the Maysdorf LBA Tract Analysis Area.

were used for the inventories and verified in the field, concurrent with vegetation mapping. Wetland areas mapped by the USFWS have been altered somewhat due to CBNG-related water production within and upstream of the general analysis area. Figure 6 depicts NWI wetland mapping updated to reflect the current situation.

At intermittent locations in upland swales and depression areas that are found with sufficiently often-wetted soils are small patches of inland saltgrass (*Distichlis stricta* var. *spicata*) that are supported by ground water seepage. Inasmuch as these are not continuously linked to Waters of the U.S., they are regarded as non-jurisdictional. In stock pond excavations along these upland drainages are found small bands of hydrophytic vegetation (largely comprised of facultative species such as foxtail barley). During wet periods, the banks of these stock ponds may stay sufficiently well-wetted to develop the mottling associated with wetland soils. Following dry periods, such as the past six years, the wetland soil characteristics are absent. In any case, these features are isolated and regarded as non-jurisdictional.

In the large playa in Section 21, T.47N., R.71W., where nearby CBNG water extraction wells have regularly discharged water resulting in extended ponding in the playa, the vegetation has shifted from that associated with playas (primarily western wheatgrass, *Elymus smithii*, aka *Pascopyrum smithii*) to a near monoculture of common spikerush (*Eleocharis palustris*). This wetland area, which now surrounds the pond, is isolated and therefore non-jurisdictional.

Immediately along the banks of the Belle Fourche River channel are emergent wetlands in which the primary plant species are threesquare (*Schoenoplectus pungens*), field-clustered sedge (*Carex praegracilis*), Agassiz bluegrass (*Poa agassizensis*), Macoun wildrye (x *Agrohordeum macounii*), slender wheatgrass (*Elymus trachycaulis*), and foxtail barley (*Critesion jubatum* (aka *Hordeum jubatum*). Occasionally present as major species are prairie cordgrass (*Spartina pectinata*) and/or woolly sedge (*Carex lanuginosa*). Minor species sometimes present include horsetail (*Hippochaetae laevigata*), Canada thistle (*Cirsium arvense*), showy milkweed (*Asclepias speciosa*), field mint (*Mentha arvensis*), and poison suckleya (*Suckleya suckleyana*).

Within the entire wetland analysis area (5,590.65 acres, of which 1,245.96 acres are within the current Cordero Rojo Mine permit area), a total of 154.2 acres of Waters of the U.S. have been identified. A total of 33.2 acres of jurisdictional Waters of the U.S. have been identified, of which approximately 30.0 acres are jurisdictional wetlands. Identified jurisdictional wetlands occur immediately along the banks of the Belle Fourche River channel and at intermittent locations in upland swale drainages adjacent to the river. The additional 3.2 acres of jurisdictional other Waters of the U.S., which did not qualify as jurisdictional wetlands, consist primarily as the open water of the Belle Fourche River. There are an additional 121.0 acres of non-jurisdictional

Waters of the U.S. also contained in the wetland analysis area that includes a large flooded playa, stockponds, depressions, and several ephemeral riverine systems that are isolated. Non-jurisdictional wetlands (78.4 acres) are associated with stockponds, depressions, and ephemeral riverine drainages that are isolated, and non-jurisdictional other Waters of the U.S. (42.6 acres) occur as an area of open water in Section 21, T.47N., R.71W., where water produced from nearby CBNG development wells is regularly discharged, resulting in year-round ponding in a depression/playa area.

SOILS

The Maysdorf LBA soils analysis area (5,590.65 total acres) includes the LBA tract as applied for under the Proposed Action, the area added under Alternatives 2 and 3, as well as the additional area that would be disturbed by mining the LBA tract under Alternative 2 (assumed to be a ¼-mile buffer surrounding the Alternative 2 Tract configuration area). The soils analysis area has been subjected to five separate Orders 1-2 and 3 soil surveys in the recent past. The northern portion of the LBA tract as applied for is included in the original baseline soil survey of the Caballo Rojo Mine and is part of its existing approved WDEQ/LQD mine permit. Another portion of the LBA tract as applied for is included in the recently submitted Cordero Mine Southwest Amendment Area soil survey (Intermountain Resources, March 2000, Revised February 2004). The balance of the LBA tract is included in the ongoing, Order 1-2 Maysdorf soil survey (Nyenhuis 2005). Preliminary results of this survey have been added to previously completed surveys for overall project evaluation. The LBA tract has also been covered by the recent NRCS Order 3 soil survey of southern Campbell County (Westermann and Prink, 2004).

All soil surveys were completed to an Order 1-2 and 3 resolution in accordance with WDEQ/LQD Guideline No.1, which outlines required soils information necessary for a coal mining operation. The inventories included field sampling and observations at the requisite number of individual sites, and laboratory analysis of representative collected samples. Soils within the analysis area were identified by series, which consist of soils that have similar horizons in their profile. Horizons are soil layers having similar color, texture, structure, reaction, consistency, mineral and chemical composition, and arrangement in the profile.

The soil depths and types on the Maysdorf LBA Tract soils analysis area are similar to soils currently being salvaged and utilized for reclamation at the adjacent Cordero Rojo Mine and other mines in the eastern PRB. The following is a list of the soil types and map units that were delineated on the proposed affected area associated with mining the Maysdorf LBA Tract, including the area added under Alternatives 2 and 3. The major soils series encountered within the survey area were grouped according to the primary soil formation processes and are listed as follows:

Soils developing predominantly in thin residuum from sandstone or shale on upland ridges

- Samday clay loam, 3-15 percent slopes (SAD)
- Shingle clay loam-Rock Outcrop complex, 10-60 percent slopes (151DE)
- Shingle- Thedalund (now Theedle) complex, 6-30 percent slopes (347CD)
- Shingle-Worf complex, 10-30 percent slopes (401D)
- Shingle-Rock Outcrop-Taluce complex, 3-60 percent slopes (SRTD)
- Shingle and Taluce soils, 3-15 percent slopes (STD)

Soils developing predominantly in slopewash, colluvium, or alluvial fan deposits from mixed sources on gently sloping uplands

- Fort Collins (now Forkwood) loam, 0-6 percent slopes (b45AB)
- Cushman very fine sandy loam, 6-15 percent slopes (75CD)
- Bidman-Briggsdale (now Parmleed) association, 0-6 percent slopes (365AB)
- Olney (now Hiland)-Bowbac association, 0-6 percent slopes (380AB)
- Bowbac sandy loam, 0-6 percent slopes (B380AB)
- Olney (now Hiland) fine sandy loam, 0-6 percent slopes (O380AB)
- Olney (now Hiland)-Bowbac association, 3-12 percent slopes (380CD)
- Bowbac sandy loam, 5-15 percent slopes (B380CD)
- Olney (now Hiland) fine sandy loam, 6-15 percent slopes (O380CD)
- Olney (now Hiland)-Decolney association, 0-9 percent slopes (392AB)
- Decolney sandy loam, 0-6 percent slopes (D392AB)
- Decolney fine sandy loam, 9-20 percent slopes (D392CD)
- Olney (now Hiland) fine sandy loam, 9-20 percent slopes (O392CD)
- Bowbac, Cushman, and Pugsley soils, 0-10 percent slopes (BCPC)
- Decolney, Hiland, and Forkwood soils, 0-10 percent slopes (DHFC)
- Kishona loam, 3-10 percent slopes (KIC)
- Renohill and Parmleed soils, 0-6 percent slopes (RPB)
- Theedle loam, 3-10 percent slopes (THC)
- Ulm and Bidman soils, 0-6 percent slopes (UBB)

Soils developing predominantly in coarse-textured alluvium and sandy eolian deposits on rolling uplands

- Valent (now Orpha) fine sand, 6-15 percent slopes (61CD)
- Tassel (now Taluce)-Tulloch-Vona (now Vonalee) association, 6-30 percent slopes (404CD)
- Tulloch fine sandy loam, 6-20 percent slopes (T404CD)
- Terro sandy loam, 3-10 percent slopes (TRC)
- Turnercrest sandy loam, 3-15 percent slopes (TUD)
- Vonalee sandy loam, 3-10 percent slopes (VOC)

Drainage soils developing in mixed stream laid alluvium on terraces and channels and in fine-textured playa deposits in depressions and closed basins

- Felix clay, 0-2 percent slopes (FEA)
- Felix clay, saline, 0-2 percent slopes (FSA)
- Torriorthents, saline, 0-10 percent slopes (TSC)
- Heldt clay loam, saline, 0-3 percent slopes (HESA)
- Haverdad loam, 0-3 percent slopes (HAA)
- Fluvaquents-Haverdad complex, 0-3 percent slopes (FHA)
- Arvada loam, 0-6 percent slopes (ARB)

Table 4 provides the extent of six depth classes of suitable topsoil within the soils analysis area.

Table 4. Acres of Topsoil Available for Reclamation Within the Maysdorf LBA Tract Soils Analysis Area.

Thickness of Suitable Topsoil (inches)	Acres	Percent
0	125.4	2.2
0 - 12	482.2	8.6
12 - 30	3,934.0	70.4
30 - 48	934.3	16.7
48 - 60	110.4	2.0
> 60	0.0	0.0
Unknown	4.4	0.1
Total	5,590.7	100.0

The Maysdorf LBA Tract baseline soils analysis indicates that the amount of suitable topsoil that would be available for redistribution on all disturbed acres within the analysis area during reclamation would have an average depth of 1.9 ft. Areas of unsuitable soils include sites with high alkalinity, salinity or clay content. The tract is expected to have adequate quantity and quality of soil for reclamation. The site-specific soil surveys have located hydric soils and/or inclusions of hydric soils, which are one component used in identifying wetlands.

VEGETATION

The vegetation analysis area (5,590.65 total acres) includes the LBA tract as applied for under the Proposed Action, the area added under Alternatives 2 and 3, and the additional area (assumed to be a ¼-mile buffer) that would be disturbed by mining the LBA tract under Alternative 2. The Maysdorf LBA vegetation analysis area is partially located within and west and south of the

current Cordero Rojo Mine permit boundary. Consequently, portions of the analysis area were previously mapped and sampled in accordance with the current WDEQ/LQD mine permitting requirements. The balance of the vegetation assessment was completed by ESCO Associates, Inc. of Boulder, Colorado in 2005. The vegetation communities in this area were appraised and mapped to provide a preliminary assessment.

A total of eight vegetation types have been preliminarily identified and mapped within the Maysdorf LBA vegetation analysis area. Water and disturbed areas were also mapped. Table 5 presents the acreage and percent of the analysis area encompassed by each vegetation type. Figure 7 depicts the eight vegetation communities, previously disturbed areas, and areas covered by open water within the analysis area. The vegetation types include sagebrush grassland, sandy grassland, rough breaks, playa, saline grassland, streamside bottomland, crested wheatgrass pasture, and salt pond. These vegetation types are described as follows:

Table 5. Vegetation Types Identified and Mapped Within the Maysdorf LBA Tract Vegetation Analysis Area.

Vegetation Type	Acres	Percent of Area
Sagebrush Grassland	3,071.63	54.94
Sandy Grassland	1,811.31	32.40
Rough Breaks	282.43	5.05
Saline Grassland	124.52	2.23
Crested Wheatgrass Pasture	121.46	2.17
Playa	43.31	0.77
Water	42.59	0.76
Streamside Bottomland	36.64	0.66
Disturbed Area	34.35	0.61
Salt Pond	22.41	0.40
Total	5,590.65	100.00

Source Nyennuis 2005

The **Sagebrush Grassland** vegetation type is characterized by the moderate to heavy presence of Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) in addition to the upland grasses of the region, in particular needleandthread (*Stipa comata*), blue grama (*Bouteloua gracilis*), and western wheatgrass (*Elymus smithii*) along with locally abundant occurrence of the upland sedges, especially threadleaf sedge (*Carex filifolia*) and needleleaf sedge (*Carex stenophylla*). The introduced forage plant crested wheatgrass (*Agropyron cristatum*) is a frequently present minor grass, having been interseeded in some locations and having spread on its own in other areas. On

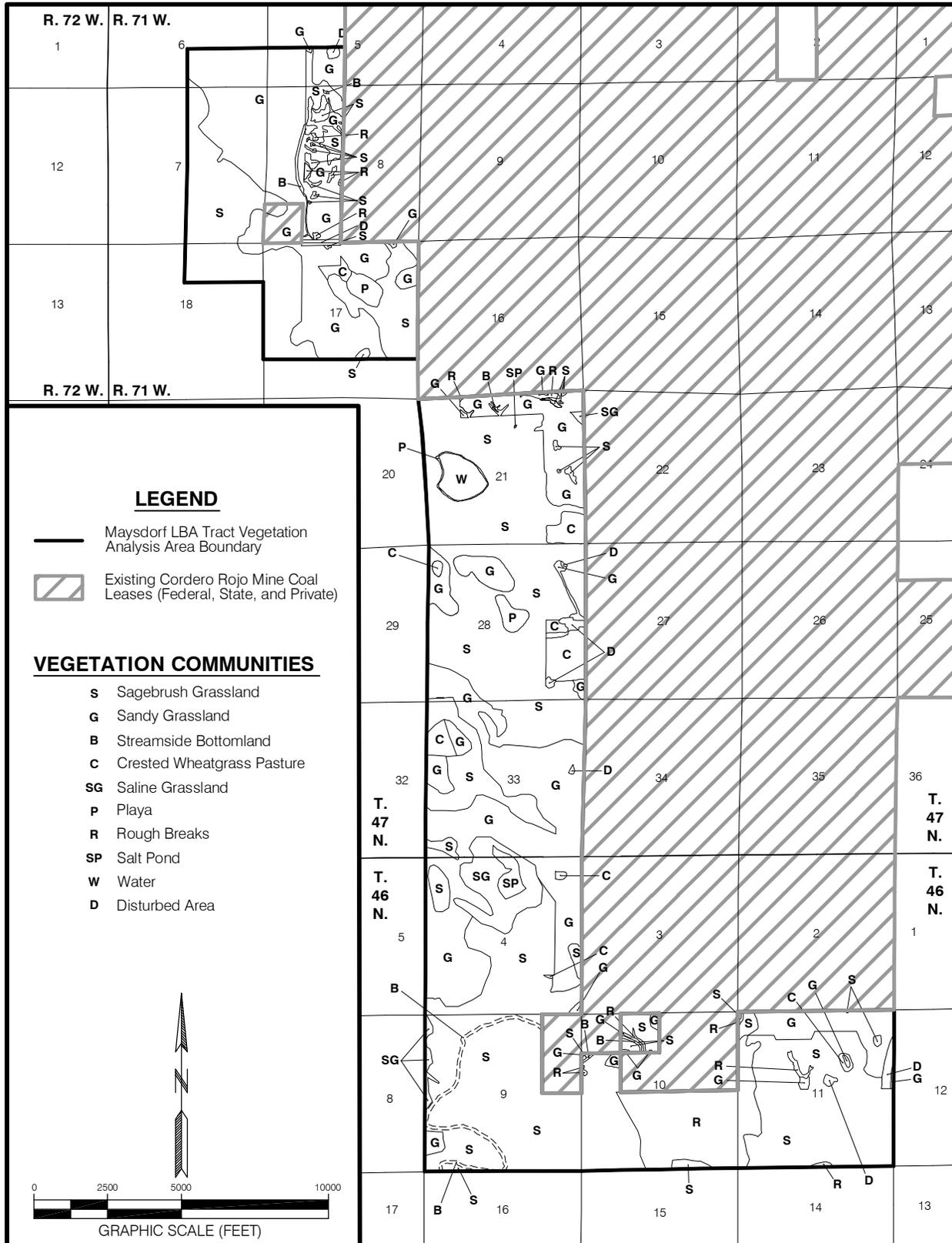


Figure 7. Vegetation Communities Within the Maysdorf LBA Tract Analysis Area.

the average minor, but locally extensive, are the native grasses Montana wheatgrass (*Elymus lanceolatus* ssp. *albicans*), Sandberg bluegrass (*Poa secunda*), and Junegrass (*Koeleria macrantha*). Variably abundant depending on the late season moisture of the previous year are the introduced winter annual grasses, Japanese brome (*Bromus japonicus*), and cheatgrass (aka downy brome, *Bromus tectorum*).

Manyspine plains pricklypear cactus (*Opuntia polyacantha*) is frequently a large component of the vegetation cover and the ground-dwelling (but not ground-attached) lichen *Parmelia* (*Xanthoparmelia*) *chlorochroa* can make a significant contribution to ground cover, particularly in dry years. Although forbs are a minor cover component, the most consistently present are cowboy's delight (aka scarlet globemallow, *Sphaeralcea coccinea*) and silverleaf scurfpea (*Psoralea argophylla*). The native subshrub fringed sagewort (*Artemisia frigida*) is usually present in small amount.

Included in the Sagebrush Grassland vegetation type are narrow, relatively moist environments associated with the shallow depressions and swales that conduct runoff water off the uplands. Such areas not only have supplemental water but also receive soil transported from the convex sites nearby and thereby possess greater moisture holding capacity (due to greater organic soil (topsoil) depths). The result is localized elevation of productivity of grasses such as western wheatgrass, green needlegrass (*Nasella viridula*), and bluegrasses (*Poa* spp.).

The presence of sagebrush is related to several environmental factors that in one way or another enhance shallow soil moisture in the early part of the growing season. These are concave surface topography, protection from wind (by virtue of sheltering high ground located up-wind), and somewhat finer-textured soils. The first two reduce the exposure to drying wind and enhance the accumulation of snow in winter. The third tends to allow higher retention of soil moisture that makes its way into the soil (slowly) during winter and spring periods.

The **Sandy Grassland** vegetation type is characterized by the strong dominance of needleandthread and upland sedges, especially threadleaf sedge and sunsedge (*Carex pensylvanica* ssp. *digyna*). In certain areas, prairie sandreed (*Calamovilfa longifolia*) may be present but is not dominant. Minor species of grass often include blue grama, Junegrass, western wheatgrass, and thickspike wheatgrass (*Elymus lanceolatus* ssp. *lanceolatus*). The domesticated species crested wheatgrass and smooth brome (*Bromus inermis* ssp. *inermis*) are erratically present. On some years the native annual grass sixweeks fescue can be relatively abundant. Introduced annual grasses (Japanese brome and cheatgrass) are frequently present in small amounts. To a greater degree than in Sagebrush Grassland, the vagrant lichen *Xanthoparmelia chlorochroa* contributes substantial (though unattached) ground cover.

As in Sagebrush Grassland, forbs do not contribute a major portion of ground cover. Besides cowboys delight, which is also frequent in Sandy Grassland, more commonly encountered perennial forbs include hairy goldenaster (*Heterotheca villosa*), ironplant goldenweed (*Haplopappus spinulosus*), scarlet gaura (*Gaura coccinea*), western wallflower (*Erysimum asperum*), and stoneseed (*Lithospermum incisum*). The perennial adventive weed rush skeletonweed (*Lygodesmia juncea*) is frequently present. Manyspine pricklypear cactus is frequently present; however, it is less abundant than in Sagebrush Grassland. The native subshrub fringed sagewort is commonly present. An occasional few individuals of Wyoming big sagebrush may be present on some sites.

Environments in which this vegetation type occurs are upland, mostly convex sites that are relatively wind-exposed and more often snow-free. Soils are usually coarser in surface texture than in Sagebrush Grassland.

In the **Rough Breaks** vegetation mapping units, erosional loss of soil exceeds its formation rate and the result is a “badlands” surface in which plant cover is sparser than in the Sagebrush Grassland and Sandy Grassland. Although the total vegetation cover on these sites is lower, the diversity of vascular plant species is greater. Grasses present may include most of those found in the more extensive upland types described above (Sagebrush Grassland and Sandy Grassland), but in addition, such species as bluebunch wheatgrass (*Elymus spicatus*) and Indian ricegrass (*Achnatherum hymenoides*) are present. Forbs may comprise very slightly greater cover than elsewhere, but they are much more conspicuous on average. They may include species such as Louisiana sagewort (*Artemisia ludoviciana*), thoroughwort (*Brickellia eupatorioides*), bastard toadflax (*Commandra umbellata*), hiddenflower (*Cryptantha* spp.), hooker sandwort (*Eremogone hookeri*), western wallflower, hairy goldenaster, gumweed machaeranthera (*Machaeranthera grindelioides*), stemless evening primrose (*Oenothera caespitosa*), cutleaf evening primrose (*Oenothera coronopifolia*), silverleaf scurfpea, white beardtongue (*Penstemon albidus*), and the ubiquitous cowboys delight. Subshrubs are diverse also and often include gardner saltbush, shortstem wildbuckwheat (*Eriogonum brevicaulis*), snakeweed (*Gutierrezia sarothrae*), and pricklyphlox (*Leptodactylon pungens*), along with the widespread fringed sagewort. Shrubs present include Wyoming big sagebrush, prickly rose (*Rosa acicularis*), and rubber rabbitbrush (*Ericameria nauseosus* var. *graveolens*).

The term **Playa** is applied, as is the custom in the Northern Great Plains, to relatively small interior draining sites in which runoff from adjacent gentle slopes accumulates along with transported clay-size soil particles. Over time, the build-up of fines in the bottoms of these depressions produces a very heavy soil that supports nearly pure stands of western wheatgrass, a grass particularly well-adapted to heavy clay soil. Other species that may occur in minor amounts include Agassiz bluegrass (*Poa agassizensis*), Canada bluegrass (*Poa compressa*), foxtail barley (*Hordeum jubatum*), and alkali bluegrass (formerly *Poa juncifolia*, now taxonomically part of *P. secunda*).

The **Saline Grassland** vegetation type is confined to locations where the soil parent material is apparently derived from a stratum with higher inherent salt content. As a consequence, the grassland vegetation, otherwise resembling Sagebrush Grassland (with generally sparse shrub presence) is possessed of a varying co-dominance between inland saltgrass (*Distichlis stricta*), western wheatgrass, and blue grama. In some slightly concave sites, the inland saltgrass cover is dense and may be accompanied by substantial amounts of alkali sacaton (*Sporobolus airoides*) along with Nuttall alkaligrass (*Puccinellia nuttalliana*). Salt efflorescence is present on the soil surface in occasional portions of this type.

The **Streamside Bottomland** vegetation type is comprised primarily of lands that are sufficiently well-wetted to qualify as wetlands under COE 1987 delineation guidelines. Most of this type exists in the form of narrow bands of from approximately two to 50 ft in width along the edges of the Belle Fourche River. Dominant plants are usually some combination of threesquare (*Schoenoplectus pungens*), common spikerush (*Eleocharis palustris*), broadleaf cattail (*Typha latifolia*), and bulrush (*Schoenoplectus tabernaemontani*). Along the upslope edge of these wetland communities are bands of variable width of plant growth supplemented by uptake by deep roots or the rise of moisture from deeper zones wetted by capillary rise. The vegetation of these zones is comprised largely of the deep-rooted prairie cordgrass (*Spartina pectinata*) or inland saltgrass. Portions of the streamside bottomland type are depicted on Figure 7 as dashed lines to indicate that the boundaries are not exact and only show the presence to the vegetation type.

The **Crested Wheatgrass Pasture** vegetation type that is located in various, relatively small parcels throughout the Maysdorf LBA vegetation analysis area have been planted to elements of the Eurasian domesticated grass complex known as crested wheatgrass (*Agropyron cristatum* and *Agropyron desertorum*). These areas probably were originally part of the Sagebrush Grassland vegetation type. It is likely that most were plowed prior to seeding. The purpose of the conversion in general has been to elicit greater livestock forage production capability and eliminate non-palatable species such as sagebrush and cactus, especially. With the passage of time after these seedings, native plants, including sagebrush and cactus as well as most of the native grasses, return slowly and the area begins to resemble Sagebrush Grassland again. The areas included in this mapping unit within this analysis area are those that are still predominately crested wheatgrass. Some other apparent old plantings especially along the south edge of the analysis area are so far along the process of recovery to Sagebrush Grassland that they were included with that type.

The **Salt Pond** vegetation mapping units are like playa sites with interior drainage that are intermittently flooded. Salt Pond sites differ in that they have sufficient salt accumulation that, when dry, exhibit a white crust of salt and there is virtually no vegetation cover. The Salt Pond sites of the vegetation

analysis area are typically immediately surrounded by Saline Grassland vegetation.

Open **Water** on the site is to a large degree a recent development relating to the onset of CBNG development in the area. Extracted groundwater from coal seams has largely been liberated on the surface to find its own way downslope. The Belle Fourche River (formerly an intermittent stream in this area) now is supplied with water continuously from sources onsite as well as offsite and upstream. Hence, open water in the channel is a feature of mappable magnitude. One moderately large playa in Section 21, T.47N., R.71W. is receiving CBNG discharge water within its drainage basin and consequently it is now mostly a permanent shallow pond.

With the abundance of both CBNG and traditional oil and gas extraction in the area, networks of **Disturbed Areas** are present that overlay much of the Sagebrush grassland and Sandy Grassland vegetation types. Disturbance consists primarily of roads and well pads that are stabilized with clinker (or scoria) gravel. There are also small tank batteries and numerous miles of pipeline disturbance that to varying degrees are recovering vegetation cover. Due to the changing nature of the disturbance areas, not all disturbance areas are depicted on Figure 7.

WILDLIFE

Wildlife Resources

Background information on wildlife in the vicinity of the Maysdorf LBA Tract was drawn from several sources, including the South Powder River Basin Coal FEIS (BLM 2003), WGFD and USFWS records, and personal contacts with WGFD and USFWS biologists. Site-specific data for the Maysdorf LBA Tract general analysis area were obtained from several sources, including WDEQ/LQD mine permit applications and annual wildlife monitoring reports for the applicant and nearby coal mines. CMC initiated baseline investigations in 2005 expressly for the Maysdorf LBA Tract. All wildlife baseline study procedures were reviewed with Mr. Vern Stelter of the WGFD. Intermountain Resources (IR) met with Mr. Stelter in 2005 and obtained approval of the Maysdorf LBA Tract wildlife baseline study plan. The proposed lease area has received comprehensive coverage during baseline and annual wildlife monitoring surveys for the adjacent Cordero Rojo Mine since the mid-1970s. Baseline and annual wildlife surveys cover a large perimeter around mine permit areas; consequently, a majority of the proposed lease area and adjacent lands have been surveyed for wildlife species as part of the required monitoring surveys for the Cordero Rojo, Belle Ayr and Coal Creek Mines. The results of site-specific surveys for the entire leased area and appropriate perimeter would be part of the mine permitting process if the tract is leased.

The topography within the general analysis area is mainly gently rolling and of moderate relief, influenced by the Belle Fourche River. Rough breaks and streamside bottomland areas occur in the southern portion of the tract near the Belle Fourche River valley. Elevation ranges from approximately 4,510 to 4,770 ft above sea level.

In an undisturbed condition, the major vegetation types in the general analysis area provide high quality habitats for many species. Vegetation types tend to occur in a mosaic across the landscape; therefore, many wildlife species can be expected to utilize more than one habitat type. Wildlife habitat types include sagebrush grassland, sandy grassland, seeded grassland, bottomland grassland, and rough breaks. Various, relatively small parcels of crested wheatgrass pasture occur throughout the area and networks of road and well-pad disturbance areas overlay much of the sagebrush grassland and sandy grassland areas. There are also numerous tank batteries and miles of pipeline disturbance with varying degrees of recovering vegetative cover. No designated critical, crucial, or unique wildlife habitats are present in the area.

The predominant habitat type is sagebrush grassland, which consists mostly of Wyoming big sagebrush, western wheatgrass, needleandthread, prairie junegrass, Sandberg bluegrass, blue grama, cheatgrass brome, crested wheatgrass, and locally abundant upland sedges. The manyspine plains pricklypear cactus is frequently a large component of the sagebrush grassland community. The sandy grassland is the next largest habitat type and it consists mostly of needleandthread and upland sedges. In certain areas, prairie sand reed, western wheatgrass, blue grama, prairie junegrass, and thickspike wheatgrass are predominant. Domesticated crested wheatgrass and smooth brome are erratically present, as is the native annual grass sixweeksgrass. Japanese brome and cheatgrass brome, both introduced annual grasses, are frequently present in some areas. Seeded grassland is dominated by crested wheatgrass, but older seedings have a mixture of less dominant native plant species, and with the passage of time these seedings begin to resemble sagebrush grassland again. Bottomland grassland, or streamside bottomland habitat is limited to a narrow band along the edges of the Belle Fourche River in the southern portion of the general analysis area. Vegetation common to these areas includes threesquare, common spikerush, broadleaf cattail, bulrush, and inland saltgrass. No trees are present along the river or any of its tributaries in the LBA tract. Rough breaks habitat is distinguished by the irregularity of vegetation, slopes, and soils. Vegetation on the rough breaks is typically sparse, although the diversity of vascular plant species is greater than in the sagebrush grassland and sandy grassland communities.

Under natural conditions, all streams, including the Belle Fourche River, within and adjacent to the LBA tract are ephemeral. In response to surface discharge of groundwater associated with CBNG production upstream of the LBA tract, which is a relatively recent phenomenon, streamflow occurrence is now more persistent. The Belle Fourche River and the distinctive shallow pools

that are present along its natural course in the general analysis area are seldom completely dry, resulting in an increase in habitat for waterfowl, shorebirds, and aquatic species. No more than six small stock reservoirs and two playa areas exist in the general analysis area. One of the playas is now mostly a temporary shallow pond as the result of a CBNG well discharging within its drainage area. Cordero Rojo Mine's approved mining plan allows disturbance of the Belle Fourche River channel. Approximately six miles of the natural channel has been diverted to-date within the Cordero Rojo Mine's current permit area. CMC would propose another diversion of the Belle Fourche River if they acquire a lease for the Maysdorf LBA Tract.

Big Game

Two big game species are common in the vicinity of the proposed lease area: pronghorn (*Antilocapra americana*) and mule deer (*Odocoileus hemionus*). The WGFD classifies the entire general analysis area as winter/yearlong range for pronghorn and primarily as yearlong range for mule deer. No crucial big game habitat or migration corridors are recognized by the WGFD in this area. White-tailed deer (*Odocoileus virginianus*) and elk (*Cervus elaphus*) are transients east of the Maysdorf LBA Tract.

Pronghorn are by far the most common big game species in this area. The Maysdorf LBA study area, which includes the Maysdorf LBA Tract as applied for, the area added by Alternatives 2 and 3, and a two-mile radius, is within pronghorn antelope Hunt Area 24, part of the WGFD Hilight Herd Unit. WGFD estimated the 2004 post-season pronghorn population to be approximately 11,416; the herd objective is 11,000 individuals (WGFD 2004). Winter pronghorn population trends in the general vicinity were initially tracked during annual monitoring at the CMC and CRI Mines. Based on the recommendations of the WGFD, big game monitoring was discontinued in 1999. This recommendation was based on the fact that years of big game monitoring had demonstrated that surface coal mining was having little long-term negative impacts on pronghorn or mule deer. Pronghorn tend to favor sagebrush shrubland and mixed grass prairie habitats in the area but also frequent reclaimed lands.

Mule deer are present in the vicinity of the LBA tract in relatively low numbers year-round. The study area is in Hunt Area 21 of the Thunder Basin Mule Deer Herd Unit. The WGFD estimated the 2003 post-season mule deer population for that herd unit at approximately 19,299, which is near the current objective of 20,000 individuals (WGFD 2004). Mule deer use nearly all habitats in this area, although they favor sagebrush grasslands, rough breaks, mine reclamation, and the riparian bottomland along the Belle Fourche River.

White-tailed deer are generally managed separately by the WGFD in the Central Herd Unit. White-tailed deer prefer riparian habitats and are therefore infrequently recorded east of the proposed lease area and rarely encountered in

the Maysdorf LBA Tract due to the lack of that particular habitat. Incidental observations are generally confined to the Belle Fourche River riparian corridor and Pine Hills east of the Cordero Rojo Mine. The Maysdorf LBA Tract and the Cordero Rojo Mine are generally considered out of the normal use range of the white-tailed deer by the WGFD.

A small population of elk resides in the Rochelle Hills southeast of the proposed lease area. The study area extends slightly into the northern portion of Hunt Area 123 of the Rochelle Hills Elk Herd Unit. The WGFD estimated the 2003 post-season elk population for that herd unit at approximately 500, which is above the current objective of 400 (WGFD 2004). Elk have been recorded primarily as transients in the security of the Pine Hills east of the Cordero Rojo Mine. The Maysdorf LBA Tract and the Cordero Rojo Mine are generally considered out of the normal range of these elk by the WGFD. However, elk have frequented reclaimed lands on other coal mines in the southern PRB.

Other Mammals

A variety of small and medium-sized mammal species occur in the vicinity though not all have been observed on the LBA tract itself. These include predators and furbearers, such as coyote (*Canis latrans*), red fox (*Vulpes vulpes*), bobcat (*Lynx rufus*), striped skunk (*Mephitis mephitis*), badger (*Taxidea taxus*), muskrat (*Ondatra zibethicus*), and beaver (*Castor canadensis*). Prey species include various rodents (such as mice, rats, gophers, voles, ground squirrels, and chipmunks, muskrats, and black-tailed prairie dogs) and lagomorphs (jackrabbits and cottontails). Results from small mammal trapping during baseline and monitoring studies at the Cordero Rojo Mine and other mines in the PRB have demonstrated that these small mammal species are cyclically common and widespread throughout the region. Lagomorphs were at or near the peak in their cycle in 2005. The small mammals present are important prey for raptors and other predators. Porcupines (*Erethizon dorsatum*) and bats (such as hoary [*Lasiurus cinereus*] and big brown [*Eptesicus fuscus*]) have habitat in the Pine Hills east of the Cordero Rojo Mine area.

In 2005, IR conducted a survey for prairie dog colonies in the vicinity of the Maysdorf LBA Tract, and none were found to exist on or within a two mile radius of the LBA tract as proposed and the area added by Alternatives 2 and 3. One black-tailed prairie dog town does exist several miles to the east and another black-tailed prairie dog town exists several miles to the west of the LBA tract. Neither of these towns will be disturbed by current or proposed mining activities. Black-tailed prairie dog towns provide habitat for the endangered black-footed ferret (*Mustela nigripes*) but in 2004 the USFWS made the decision that ferret surveys are no longer required in black-tailed prairie dog towns in Wyoming.

Raptors

Numerous raptor species are known to nest in the PRB. Habitat is limited for those species that nest exclusively in trees or on cliffs, but several species are adapted to nesting on the ground, creek banks, buttes, or rock outcrops. Through 2005, 26 raptor nests (natural and man-made) had been located within the Maysdorf raptor survey area, which includes the LBA tract as applied for under the Proposed Action, Alternatives 2 and 3, and a two-mile buffer surrounding these areas. Over time, natural forces destroyed many nests; others were relocated for mitigation or removed by mining activities. Seven raptor nests (two golden eagle and five ferruginous hawk nests) were created by the mine as mitigation measures. In 2005, ten nests in the survey area were occupied: three on the LBA tract as proposed, none on the lands added under Alternatives 2 and 3, and seven on lands within two miles of the LBA tract. Nests occupied on the Maysdorf LBA Tract in 2005 included: two Swainson's hawk (*Buteo swainsoni*) nests and one ferruginous hawk (*Buteo regalis*) nest. No occupied nest sites were observed on the lands added under Alternatives 2 and 3 in 2005. Detailed data for raptor nests in the vicinity of the survey area can be found in recent annual wildlife reports submitted to WDEQ/LQD by the CMC and CRI Mines.

As noted previously, ten pairs of raptors occupied nests on the LBA Tract or within two miles in 2005. Three pairs nested on the LBA tract and no nests were recorded on the area added under Alternatives 2 and 3. The ten raptor pairs nesting in the study area, including all three on the LBA tract, fledged a total of 15+ young in 2005. The successful nesting pairs of raptors included one pair of golden eagles (*Aquila chrysaetos*), five pairs of red-tailed hawks (*Buteo jamaicensis*), one pair each of ferruginous hawks and great horned owls (*Bubo virginianus*), and two pairs of Swainson's hawks.

One pair of golden eagles has nested on the LBA tract as proposed as recently as 2004. This golden eagle nest was a platform that was moved in late 2004 because of encroaching mining activities. The relocated platform nest site was used by red-tailed hawks in 2005. Ferruginous hawks, Swainson's hawks, red-tailed hawks, golden eagles and great horned owls have regularly nested in the Cordero Rojo Mine study area since wildlife surveys began. Other raptors have also nested on the area but less consistently. The currently approved raptor mitigation plans developed for the Cordero Rojo Mine would be updated to incorporate all raptor nests on the LBA tract, and adjacent lands, if it is leased and proposed for mining.

Upland Game Birds

The only upland game birds known to occur in the vicinity of the Maysdorf LBA Tract are mourning doves (*Zenaida macroura*), gray partridge (*Perdix perdix*), and sage grouse (*Centrocercus urophasianus*). Mourning doves are a migrant and relatively common in the area during migration particularly near sites with

trees and water sources and in the summer for breeding and nesting. This species is a common summer resident in Wyoming and common breeding bird in Campbell County. Gray, or Hungarian partridge, an introduced species, have been infrequently observed on reclaimed areas, sagebrush shrublands, upland grasslands and cultivated lands during wildlife surveys conducted on the Cordero Rojo Mine study areas. This upland game species is considered uncommon within the area.

Sage grouse are yearlong residents of the area and are occasionally encountered on lands within and adjacent to the Maysdorf LBA wildlife study area. There are no historic or active sage grouse leks on the LBA tract, but three recently active leks are located within two miles of the tract as proposed. The Belle Ayr Lek is located in the SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 6, T.47N., R.71W., the Stowe Lek is in the SE $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 6, T.47N., R.71W., and the Doud Lek is in the NW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 17, T.46N., R.71W. Each sage grouse lek is surveyed at least three times each breeding season. Research has indicated that most hens will nest within a three-mile radius around an active lek. Annual monitoring of the Belle Ayr Lek began in 1990 and continues through the present. Male grouse attendance declined from a high of 12 males in 1991 to a relatively low average number of 4 males over the last 16 years. Only one male was observed in attendance at the Belle Ayr lek in 2005. The Stowe Lek was first documented in 2000 and has been annually monitored since that time. Peak male grouse attendance was eight males in 2001 at the Stowe Lek but no birds were recorded on this lek in 2003, 2004, or 2005. The Doud lek was first observed in 1999 and has been monitored since that time. The peak male attendance on this lek was in 2003 with seven males present. No birds were in attendance at the Doud lek during the 2004 and 2005 surveys. A three-mile radius around the Stowe, Belle Ayr, and Doud leks extends onto the LBA tract as proposed.

Seven historical sage grouse lek sites (no attendance observed in the past 10 years) have been identified within several miles of the Maysdorf LBA Tract. Five of these seven historical lek sites are located within two miles of the Maysdorf LBA Tract.

Migratory Bird Species of Management Concern in Wyoming

Table 6 provides a list of the Migratory Bird Species of Management Concern in Wyoming (USFWS 2002b) that the USFWS will use exclusively for reviews concerning existing and proposed coal mine leased land. This listing was taken directly from the Wyoming Bird Conservation Plan (Cerovski et al. 2000). The regional status and expected occurrence, historical observations, and breeding records on or near the Maysdorf LBA Tract for each listed species are included in Table 6. Fifteen of the listed species have historically been observed on or near the Maysdorf LBA Tract. The species observed nesting in the area include the ferruginous hawk, Swainson's hawk, greater sage grouse, loggerhead shrike (*Lanius ludovicianus*), Brewer's sparrow (*Spizella breweri*), vesper sparrow

Table 6. Migratory Bird Species of Management Concern in Wyoming: Their Regional Status, and Expected and Actual Occurrence on or Near the Maysdorf LBA Tract.

Species	Seasonal Status/Breeding Records in Northeastern WY ¹	Expected Occurrence on and in Vicinity of the LBA Tract ²	Historical Sighting Records and Breeding Status in Vicinity of the LBA Tract ³
LEVEL I (species need conservation action)			
Mountain plover	Summer/Breeder	Rare	None
Greater sage-grouse*	Resident/Breeder	Common	Common breeder
McCown's longspur*	Summer/Breeder	Uncommon	Uncommon breeder
Baird's sparrow	Summer/Observed	Rare	None
Ferruginous hawk*	Resident/Breeder	Common	Common breeder
Brewer's sparrow*	Summer/Breeder	Common	Common breeder
Sage sparrow	Summer/Breeder	Rare	None
Swainson's hawk*	Summer/Breeder	Common	Common breeder
Long-billed curlew*	Summer/Observed	Uncommon	Uncommon breeder
Short-eared owl*	Resident/Breeder	Uncommon	Uncommon breeder
Peregrine falcon	Resident/Observed	Uncommon Migrant	None
Burrowing owl*	Summer/Breeder	Uncommon	Uncommon breeder
Bald eagle*	Resident/Breeder	Seasonally Common	Common in winter
Upland sandpiper*	Summer/Breeder	Uncommon	Uncommon breeder
LEVEL II (species need monitoring)			
Cassin's kingbird	Never Recorded	Very Rare	None
Lark bunting*	Summer/Breeder	Common	Common breeder
Dickcissel	Summer/Observed	Very Rare	None
Chestnut-collared longspur*	Summer/Breeder	Common	Uncommon breeder
Black-chinned hummingbird	Never Recorded	Very Rare	None
Pygmy nuthatch	Never Recorded	Not Expected	None
Marsh wren	Never Recorded	Very Rare	None
Western bluebird	Summer/Breeder	Not Expected	None
Sage thrasher	Summer/Breeder	Uncommon	None
Grasshopper sparrow*	Summer/Breeder	Uncommon	Infrequent breeder
Bobolink	Summer/Observed	Very Rare	None
Common loon	Summer/Observed	Not Expected	None
Black-billed cuckoo	Never Recorded	Not Expected	None
Red-headed woodpecker	Summer/Breeder	Rare	None
Yellow-billed cuckoo	Summer/Observed	Not Expected	None
Eastern screech-owl	Never Recorded	Not Expected	None
Western screech-owl	Never Recorded	Not Expected	None
Western scrub-jay	Never Recorded	Not Expected	None
Loggerhead shrike*	Summer/Breeder	Uncommon	Occasional breeder
Vesper sparrow*	Summer/Breeder	Common	Common breeder
Lark sparrow	Summer/Breeder	Uncommon	None
Ash-throated flycatcher	Summer/Observed	Not Expected	None
Bushtit	Never Recorded	Not Expected	None
Merlin	Resident/Observed	Uncommon Migrant	None
Sprague's pipit	Never Recorded	Rare	None
Barn owl	Summer/Observed	Very Rare	None

¹ Compiled from Luce, et al. (1999 and subsequent revisions), for the Campbell County Area.

² Expected occurrence in the study area was based on range, history of occurrence, and habitat availability.

³ Sighting records were derived from actual occurrence on or within one-half mile of the LBA tract and the Alternatives 2 and 3 tract configuration area.

* Species marked with an asterisk have historically been recorded during baseline or monitoring surveys for the Cordero Rojo Mine.

(*Poocetes gramineus*), lark bunting (*Calamospiza melanocorys*), and McCown's longspur (*Calcarius mccownii*). The upland sandpiper (*Bartramia longicauda*), burrowing owl (*Athene cunicularia*), short-eared owl (*Asio flammeus*), chestnut-collared longspur (*Calcarius ornatus*), and grasshopper sparrow (*Ammodramus savannarum*) do not have abundant nesting habitat available, but have been documented to nest in the vicinity of the Maysdorf LBA Tract. The long-billed curlew (*Numenius americanus*) has only been observed as a migrant in this area.

Mountain plovers (*Charadrius montanus*) have not been recorded within the Maysdorf LBA Tract or in adjacent areas during the 25+ years of wildlife surveys conducted in the area. Typical nesting habitat (sparsely vegetated lands, sites dominated by low growing vegetation, and prairie dog towns) is generally lacking within the study area.

The bald eagle (*Haliaeetus leucocephalus*) is seasonally common and most frequently observed during the winter months. Bald eagles are relatively common winter residents and migrants in northeastern Wyoming's PRB. No bald eagle roosting habitat is present on the Maysdorf LBA Tract or areas added by Alternatives 2 and 3. No known nest sites, or consistent yearly concentrated prey or carrion sources for bald eagles are present in the area of the Cordero Rojo Mine, including the Maysdorf LBA Tract and adjacent study area. However, this species is commonly observed in the general vicinity of the Maysdorf LBA Tract in the winter.

In the winters of 2004-2005 and 2005-2006, the bald eagle was far more common and abundant in the area than in previous years. This may have been a result of another mild winter and the abundance of lagomorphs (rabbits) to prey upon. Bald eagles also scavenged road-killed rabbits off of adjacent roads. Lagomorph numbers appeared to be at or near a peak in their cycle. In the winters of 2004-2005 and 2005-2006, bald eagles frequently used a large windbreak within the existing Cordero Rojo Mine permit area in the NW $\frac{1}{4}$ of Section 22, T.47N., R.71W. Bald eagles had never been observed concentrating in this windbreak during the previous 25+ years of wildlife surveys. A maximum of 29 bald eagles were observed at this roost site on February 16 of 2005. This roost site is within $\frac{1}{4}$ mile of active mining operations and bald eagles were commonly observed around mining activities. Bald eagle roosts or concentration areas were not observed on the Maysdorf LBA Tract during the winters of 2004-2005 and 2005-2006 or during prior wildlife monitoring surveys.

The burrowing owl is uncommon and classified as an occasional breeder in the general analysis area. The sage grouse, recently added to the Level 1 list, was previously common in the general analysis area, but their numbers have declined so they are now only occasionally encountered. The sage grouse is still classified as a common breeder on and in the vicinity of the proposed lease area.

Sited as the potential limiting factor, suitable nesting habitat is scarce if not absent in the general analysis area for most of the *Migratory Bird Species of Management Concern in Wyoming*. The other 25 species that are listed in Table 6 have only historically or never been recorded in the general analysis area.

Other Species

Incidental sightings of other species not targeted by systematic wildlife surveys completed specifically for the applicant and adjacent mines, as well as biological research projects in the eastern PRB, have documented numerous other wildlife species that are generally common inhabitants of the area. Other species observed include waterfowl, shorebirds, nongame birds and nongame fish, as well as various herptiles. Extensive wildlife species lists, that document species observed and those with the potential for occurring in the area, are included in the Cordero Rojo Mine WDEQ/LQD mine permits.

Wildlife species richness is generally greatest in habitats with water, trees, and/or varied terrain. Excluding the Belle Fourche River valley and its breaks, there is little topographic diversity within the Maysdorf LBA wildlife study area. The relatively homogeneous upland habitats and the low occurrence of water and trees would tend to indicate a limited suite of avian species. Baseline and monitoring surveys at the Cordero Rojo Mine and nearby mines confirm that habitats in this portion of the semi-arid northern Great Plains typically possess little avian diversity (Commonwealth 1980, Powder River Eagle Studies 1987-1999, Intermountain Resources 1987-2005). During the 2004-2005 annual wildlife monitoring surveys conducted for the Cordero Rojo Mine and the 2005 baseline wildlife survey conducted by IR for the Maysdorf LBA Tract, common nongame avian species observed included the lark bunting, western meadowlark (*Sturnella neglecta*), Brewer's blackbird (*Euphagus cyanocephalus*), horned lark (*Eremophila alpestris*), western kingbird (*Tyrannus verticalis*), and various species of sparrows. Numerous other avian species were observed during the yearly and seasonal surveys. These additional avian species are listed in the Cordero Rojo Mine permits.

Under natural conditions, waterfowl and shorebird habitat in the Maysdorf wildlife study area is limited to the bottomland along the Belle Fourche River and small playas and stock ponds. This habitat was primarily provided during spring migration since these bodies of water generally dried up during the summer. The Belle Fourche River within the study area could sustain waterfowl and shorebird populations in a very wet year, but during most years the river would dry up during the summer and was completely dry by fall. Lack of deep-water habitat and extensive and persistent water sources on or near the general analysis area limits the diversity of these fauna, and precludes significant production. However, the relatively recent addition of produced water from CBNG wells in the Belle Fourche River drainage upstream and within the general analysis area has supplied the river, its tributaries, ponds, and playas with water nearly continuously, resulting in an increase in habitat

for waterfowl species. Broods from the American widgeon (*Anas Americana*), blue-winged teal (*Anas discors*), mallard (*Anas platyrhynchos*), northern pintail (*Anas acuta*), northern shoveler (*Anas clypeata*), gadwall (*Anas strepera*) and green-winged teal (*Anas crecca*), were observed during 2005 along the Belle Fourche River, stock ponds, and playas during waterfowl and shore bird survey. The Canada goose (*Branta canadensis*) was also commonly observed on the study area. Shorebird species are known to occur in small numbers on and near the adjacent Cordero Rojo Mine, but very little nesting activity, except for the killdeer (*Charadrius vociferous*) has been documented. Again, there has been a relatively recent increase in habitat for shorebird species due to water production from CBNG and killdeer, spotted sandpiper (*Actitis macularia*), Wilson's phalarope (*Phalaropus tricolor*), great blue heron (*Ardea herodias*) and American avocet (*Recurvirostra americana*) were observed in 2005 by IR during the July shorebird breeding surveys along the Belle Fourche River, stock ponds, and playas.

As discussed above, the persistence of streamflow in the Belle Fourche River and increased presence of water in tributary streams, ponds, and playas, which is attributable to discharges of water from CBNG wells located upstream of and within the general analysis area, has increased potential habitat for all aquatic species within the general analysis area.

Fish surveys were conducted along the Belle Fourche River in the southern and southeastern portion of the Cordero Rojo Mine area during baseline studies in May 1975. Fish species observed during those surveys include the common carp (*Cyprinus carpio*), creek chub (*Semotilus atromaculatus*), flathead chub (*Platygobio gracilis*), sand shiner (*Notropis stramineus*), brassy minnow (*Hybognathus hankinsoni*), fathead minnow (*Pimephales promelas*), white sucker (*Catostomus commersoni*), black bullhead (*Ameiurus melas*), green sunfish (*Lepomis cyanellus*) and yellow perch (*Perca flavescens*). During the 1975 baseline study the most abundant fish species was the white sucker and various minnow species.

Under natural conditions, the lack of deep-water habitat and extensive and persistent water sources in the general analysis area limited the presence and diversity of fish and other aquatic species. In 1997, the Belle Fourche River was sampled at T.46N., R.71W., Section 19, which is several miles upstream of the Maysdorf LBA Tract. The black bullhead, creek chub, carp, fathead minnow, green sunfish, sand shiner, and white sucker were found during these surveys (Patton 1997). WGFD has categorized the black bullhead as a Status 3 species. Status 3 species are widely distributed throughout their native range with stable populations; however, habitat is declining or vulnerable. Excluding the black bullhead, none of the other aquatic species that inhabit the area are of specific concern to state or federal agencies.

In addition, 15 species of herptiles have been documented during various surveys in the general analysis area: tiger salamander (*Ambystoma tigrinum*),

plains spadefoot (*Scaphiopus bombifrons*), great plains toad (*Bufo cognatus*), boreal chorus frog (*Pseudacris triseriata maculata*), northern leopard frog (*Rana pipiens*), common snapping turtle (*Chelydra serpentina serpentina*), western painted turtle (*Chrysemys picta belli*), eastern short-horned lizard (*Phrynosoma douglassi brevirostre*), northern sagebrush lizard (*Sceloporus graciosus graciosus*), prairie rattlesnake (*Crotalus viridis viridis*), plains hognose snake (*Heterodon nasicus nasicus*), bullsnake (*Pituophis melanoleucas sayi*), western plains garter snake (*Thamnophis radix haydenii*), red-sided garter snake (*Thamnophis sirtalis parietalis*), and eastern yellowbelly racer (*Coluber constrictor flaviventris*). The abundance of reptiles and amphibians is difficult to determine but these species appear to be common to the area.

Threatened, Endangered, Proposed, and Candidate Animal Species

Potential habitat for T&E species and their occurrence on the Maysdorf LBA Tract are discussed in Appendix F of the Maysdorf EIS document.

LAND USE AND RECREATION

The majority of the surface estate on the Maysdorf LBA Tract as applied for under the Proposed Action and the area added under Alternatives 2 and 3 is privately owned by CRI, CMC, and six other private parties, with a relatively small portion owned by the United States of America. The ownership of the surface estate is shown in detail in Table 3-11 and Figure 3-14 in the Maysdorf EIS document. The federally owned land is administered by the BLM. The principal land uses within the LBA tract and the area added under Alternatives 2 and 3 include livestock grazing on native rangelands, oil and gas production, wildlife habitat, and recreation.

Areas of disturbance within the general analysis area include power transmission lines, ranching-related roads, producing, shut-in and plugged and abandoned conventional oil and gas wells, producing, shut-in and plugged and abandoned CBNG wells, roads and production facilities associated with these oil and gas wells including numerous buried pipelines, and surface mine-related facilities. No state highways cross the LBA tract but State Highway 59 lies two to four miles to the west. Several county roads traverse and provide public and private access within and near the proposed lease area. These include the Haight Road, T-7 Road, Hoadly Road, and the Hilight Road. The BNSF & UP railroad ROW also crosses a small portion of the tract.

The oil and gas estate within the Maysdorf LBA Tract as applied for and the area added under Alternatives 2 and 3 is state, federally, and privately owned, with the majority (approximately 76 percent) being privately owned. The ownership of the oil and gas estate is shown in Figure 3-15 in the Maysdorf EIS document. A list of the current federal oil and gas lessees of record is included as Table 3-12 in the Maysdorf EIS document.

As of July 28, 2005, 18 wells have been drilled into conventional oil and gas reservoirs on lands included in the Maysdorf LBA Tract as applied for and the lands added under Alternatives 2 and 3. Figure 3-15 in the Maysdorf EIS document depicts the locations of these conventional oil and gas wells. Of these 18 wells, 14 have been plugged and abandoned, one well is shut in, one well is an active injector, and two are still producing. The two producing wells are on a private lease. All the conventional oil and gas wells on the proposed lease area and the area added under Alternatives 2 and 3 were originally drilled between 1979 and 1996 and were designed to produce from either the Pennsylvanian-Permian Minnelusa Formation or the Lower Cretaceous Mowry or Muddy Formation at an average depth of approximately 10,800 ft (WOGCC 2005a).

According to the WOGCC records as of July 28, 2005, there were five producing CBNG wells and 17 shut-in CBNG wells within the Maysdorf LBA Tract as proposed and the lands added under Alternatives 2 and 3. Figure 3-15 in the Maysdorf EIS document depicts the locations of these CBNG wells. WOGCC reported cumulative production through May 2005 from each of these five producing CBNG wells ranging from no gas production from two wells that are being dewatered only, to approximately 66,400 MCF. Extensive CBNG development has occurred west of the LBA tract. CBNG wells capable of production on or in sections adjacent to the tract are listed in Appendix H in the Maysdorf EIS document. Most CBNG drilling within and near the Maysdorf LBA Tract has occurred on a 40-acre spacing pattern, either because the wells were drilled prior to the WOGCC establishing the 80-acre default spacing for CBNG wells in the PRB, or under authorization of spacing exceptions granted by WOGCC. Certain townships in the PRB are now exempt from the 80-acre spacing pattern rule, including T.46N. and T.47N., R.71W. (WOGCC 2005b). There are currently 62 remaining undrilled 40-acre lots within the Alternatives 2 and 3 tract configuration area.

Coal mining is a dominant land use in the area surrounding the proposed lease area. The Caballo, Belle Ayr, Cordero Rojo, and Coal Creek Mines form a group of contiguous or nearly contiguous surface coal mines (Figure 1-1 in the Maysdorf EIS document). There has been no production from the Coal Creek Mine since 2000; but mining operations are scheduled to resume in 2006. Coal production from the other three active mines increased by 27 percent between 1994 and 2004 (from approximately 66 million tons in 1994 to 84 million tons in 2004). One lease, West Rocky Butte, has been issued within this group of four mines since decertification of the federal coal region. The Maysdorf LBA Tract being evaluated in the Maysdorf EIS document, and the Belle Ayr North lease application, which is currently pending, are in this group of mines (Tables 1-1 and 1-2 in the Maysdorf EIS document).

Big game hunting is the principal recreational land use in the general area of the Maysdorf LBA Tract. Approximately 89 percent of the lands within the LBA tract as applied for and the area added under Alternatives 2 and 3 are privately

owned and the surface estate of the remaining 11 percent is federally owned and administered by the BLM. Recreational use is allowed and sport hunting in varying degrees is conducted only if legal access and landowner permission is available on the private surface lands. Due to safety concerns, however, public surface lands contained within an active mining area are often closed to the public, further limiting recreational use. There are approximately 407 acres of BLM-administered public surface lands included in the Maysdorf LBA Tract as applied for and the area added under Alternatives 2 and 3; however, only about 164 of those acres are legally accessible to the public. Pronghorn, mule deer, and white-tailed deer occur on or adjacent to the LBA tract. Sage grouse, mourning dove, waterfowl, rabbit, and coyote may be also harvested in the general vicinity, and some trapping of coyote and red fox may also occur.

The WGFD classifies the entire general analysis area as winter/yearlong (habitat used by animals on a year-round basis but there may be an significant influx of additional animals into the area during the winter months) for pronghorn antelope, with no crucial or critical pronghorn habitat within two miles of the tract. The Maysdorf LBA Tract (as applied for and the area added under Alternatives 2 and 3) is within pronghorn antelope Hunt Area 24, which is contained within the Hilight Herd Unit. Pronghorn are widely scattered throughout the Hilight Herd Unit. According to WGFD estimates, the pronghorn population within the Hilight Herd Unit is increasing. The post-season 2003 population was estimated at 11,416, near the herd objective of 11,000 antelope (WGFD 2004).

In 2003, the WGFD issued 764 licenses for the Hilight Herd Unit, Hunt Area 24, and 657 antelope were harvested (91 percent success rate). In the years 1998 through 2002, hunters on average harvested 253 animals with better than 88 percent success and spent 3.4 days per animal harvested. Approximately 1,708 recreation days were spent on antelope hunting in 2003. Due to the fact that the Hilight Herd Unit is at herd objectives and the population is in a trend of increasing numbers, additional harvest may be needed to better control the herd and stabilize the population near objectives. Increased harvest may be difficult to achieve because of the increased CBNG development, which is limiting hunter rifle hunting on associated lands. Given the predicted harvest and average winter conditions, the 2004 post-season population was expected to be 12,180 antelope.

The Maysdorf LBA Tract as applied for and the area added by Alternatives 2 and 3 is located within the WGFD Thunder Basin Mule Deer Herd Unit. According to WGFD maps, a majority of the proposed lease area is considered yearlong mule deer range. Crucial or critical mule deer ranges do not occur on or within several miles of the LBA tract. The LBA tract is in mule deer Hunt Area 21, part of the Thunder Basin Herd Unit, which also includes Hunt Areas 7, 8, 9, 10, and 11. The Thunder Basin Herd Unit encompasses 3,642 square miles, of this, 71 percent is privately owned. Access fees are common, resulting in heavy hunting pressure on accessible public land, particularly in

recent years. Much of the public owned surface lands are scattered and inaccessible without crossing private land.

The 2003 postseason mule deer population was estimated at 19,299, which is near the herd objective of 20,000 animals. In 2003, 1,449 mule deer were harvested from the Thunder Basin Herd Unit and the hunter success rate was 58 percent. The days spent per animal harvested were 6.6 in 2003, above the five-year average of 6.0 days. It is likely that insufficient harvest within mule deer Hunt Area 21 will result in a population increase in the future.

The Rochelle Hills Elk Herd resides in the Rochelle Hills, which is located in southeastern Campbell County, southwestern Weston County, and north central Converse County. Elk Hunt Area 123 of the Rochelle Hills Herd Unit extends into the Maysdorf LBA Tract as proposed; however, no recognized elk herds are located in the immediate vicinity and no elk have been recorded on or near the LBA track.

White-tailed deer are not managed separately by WGFD, but are included with mule deer as part of the Thunder Basin Herd Unit. White-tailed deer are considered out of the normal use range in the vicinity of the proposed lease area. These animals are seldom observed within the general analysis area due to their preference for riparian woodlands and irrigated agricultural lands. WGFD classifies the entire general analysis area, with the exception of a narrow corridor along the Belle Fourche River, as out of normal white-tailed deer use range.

Under natural conditions, aquatic habitat is very limited by the ephemeral nature of surface waters in the general analysis area; therefore, public fishing opportunities are very limited. The lack of deep-water habitat and extensive, persistent water sources limits the presence and diversity of fish and other aquatic species. Water discharged from CBNG wells located upstream of the general analysis area has supplied the Belle Fourche River with water nearly continuously, resulting in an increase in habitat for aquatic species. The Belle Fourche River currently supports a variety of nongame fish in the general analysis area. The Belle Fourche River is listed in the WDEQ/LQD Surface Water Classification List as a Class 2AB stream that is protected for drinking water, aquatic life (classified as a warm water fishery), recreation, wildlife, agriculture, industry, and scenic value. Downstream of the general analysis area, the Belle Fourche River becomes a warm water fishery. All other ephemeral streams draining the existing Cordero Rojo Mine permit area and the general analysis area are categorized as Class 4 streams (WDEQ/WQD 2005).

CULTURAL RESOURCES

CMC contracted with TRC Mariah Associates, Inc. of Laramie, Wyoming to complete a Class I and Class III cultural resource inventory of the Maysdorf

LBA Tract as proposed, the area added under Alternatives 2 and 3, and the additional lands that would be disturbed by mining the LBA tract under the Alternative 2 tract configuration (assumed to be a ¼ mile buffer) in 2005. These areas included all areas of disturbance assuming the coal is mined as a maintenance tract for the Cordero Rojo Mine. Much of the LBA survey area had already been intensively surveyed at a Class III level by numerous inventories that were associated with oil and gas field development and surface mining operations.

Previous Investigations

Class I (review of previous survey records) file searches conducted at the Wyoming SHPO produced information from 39 cultural resource projects in the Maysdorf Tract survey area. The majority of these projects are Class III seismic, well pad, and drill hole inventories conducted in association with oil and gas development. Portions of the project area surveyed at a Class II level during early projects were subsequently surveyed at a Class III level. Previous investigations also include two monitoring projects and testing of Site 48CA3285.

A total of 21 archaeological sites were identified during records searches. Of the 21 sites, 12 are prehistoric, six are historic, and three are multi-component. Prehistoric sites consist primarily of open camps and lithic scatters. All prehistoric sites are considered not eligible or are unevaluated. Historic sites consist primarily of homesteads and trash dumps. Three historic trails (Hathaway's-Black Hills Trail, Sawyer's Expedition Trail, and Crook's Military Trail) were identified and all are considered eligible to the NRHP. The remaining three historic sites are considered not eligible. The three multi-component sites consist mostly of lithic and trash scatters and are considered not eligible. Of the 21 previously recorded sites identified in the LBA tract survey area, the three historic trails are the only sites considered eligible to the NRHP.

A total of 22 isolated occurrences were identified during records searches. The isolates consist of 17 prehistoric, two historic, and three unknown/unidentified.

Current Investigations

The remainder of the Maysdorf Tract survey area was surveyed in entirety at a Class III level (newly identified cultural resources) in 2005. A total of 11 archaeological sites and 14 isolated occurrences were identified and recorded during this recent Class III inventory. The 14 isolates consist of 12 prehistoric flakes and tools and two historic artifacts. The 11 newly recorded cultural sites consist of 10 prehistoric (mostly lithic scatters) sites and one historic site. All are recommended as not eligible to NRHP. One previously recorded site (48CA1442) was updated during the inventory.

Summary

To summarize the identified cultural properties, a total of 32 archaeological sites are located in the Maysdorf Tract project area. Of these 32 sites, 22 are prehistoric, seven are historic, and three are multi-component. Three historic trails (Hathaway’s-Black Hills Trail, Sawyer’s Expedition Trail, and Crook’s Military Trail) are the only sites considered eligible to the NRHP. The remaining 29 sites are considered not eligible or are unevaluated to the NRHP. Four historic and 29 prehistoric isolated finds were also recorded. Table 7 lists the cultural sites and their classifications.

Table 7. Sites and Isolated Finds in the Class III Cultural Resource Inventory of the Maysdorf Tract Survey Area.

Prehistoric sites:

Lithic Scatter:	48CA877, 48CA1332, 48CA1396, 48CA2599, 48CA2600, 48CA3286, 48CA3287, 48CA5625, 48CA5626, 48CA5627, 48CA5628, 48CA5629, 48CA5630, 48CA5633, 48CA5634
Open Campsite:	48CA69, 48CA879, 48CA880, 48CA5631, 48CA5632
Stone Circle:	48CA1442
Campsite with Stone Circle:	48CA1438
Isolated finds:	29 lithic items

Historic sites:

Trail:	48CA1568, 48CA1570, 48CA4975
Debris:	48CA2026
Marker:	48CA3283
Livestock/Ranching:	48CA2025, 48CA5635
Isolated finds:	4 debris items

Multi-component sites: 48CA878, 48CA1343, 48CA3285

Unknown/Unidentified Isolated Finds: 3 items

Two historic trails (Hathaway’s-Black Hills Trail [48CA1568] and Sawyer’s Expedition Trail [48CA1570]) are recommended as eligible for the NRHP by their recorder. These two sites and their associated reports have not yet been concurred by the SHPO. Site 48CA4975 (Crook’s Military Trail) was concurred by SHPO in 2004. None of the other 29 archaeological sites are recommended as eligible for the NRHP.

Through mitigation procedures involving data recovery plans at each site, the archaeological record will not be negatively affected due to the loss of sites

48CA1568, 48CA1570, and 48CA4975. Archaeological excavation and analysis will provide information toward a better understanding of local history, offsetting the loss of these and the other, less significant, local historic sites to coal mining impacts. Until consultation with SHPO has occurred and agreement regarding NHRP eligibility has been reached, all sites should be protected from disturbance.

NATIVE AMERICAN CONSULTATION

No Native American heritage, special interest, or sacred sites have been formally recorded within the area covered by the LBA tract as applied for under the Proposed Action, the lands added under Alternatives 2 and 3, and the additional area that would be disturbed if the tract were mined and reclaimed as part of the existing Cordero Rojo Mine operation. All tribes identified as potentially having concerns about leasing the Maysdorf LBA Tract are being sent copies of the Maysdorf EIS document for review and comment. Should any previously unknown but significant site be identified as a result of this consultation, or in the course of the CMC's mine permit expansion, BLM is required to notify and consider the concerns of those Native American tribes most likely associated with the site.

VISUAL RESOURCES

For management purposes, BLM evaluated the visual resources on lands under its jurisdiction in the 2001 BLM Buffalo RMP update (BLM 2001a). The inventoried lands were classified into VRM classes as follows:

- Class I Natural ecologic changes and very limited management activity is allowed. Any contrast (activity) within this class must not attract attention.
- Class II Changes in any of the basic elements (form, line, color, texture) caused by an activity should not be evident in the landscape.
- Class III Contrasts to the basic elements caused by an activity are evident but should remain subordinate to the existing landscape.
- Class IV Activity attracts attention and is a dominant feature of the landscape in terms of scale.
- Class V This classification is applied to areas where the natural character of the landscape has been disturbed up to a point where rehabilitation is needed to bring it up to the level of one of the other four classifications.

The lands in the Maysdorf LBA Tract are generally classified as VRM Class IV for lands not yet disturbed by mining and Class V for lands that have already been disturbed by mining.

The current Caballo, Belle Ayr, and Cordero Rojo Mine facilities and some mining activities are visible from various public-use roads in the general analysis area, including State Highway 59, Haight Road, Hilight Road, T-7 Road, Bishop Road, and Hoadly Road. Mining activity and facilities are also visible from most sites on the LBA tract. There are currently three occupied dwellings located within three miles of the proposed lease area; the closest being approximately 1.3 miles from the western edge of the LBA tract as configured under Alternative 2. Ongoing mining and CBNG activity is visible from area residences.

NOISE

Existing sources of noise within and around the general analysis area are primarily nearby coal mining activities, rail traffic, traffic on State Highway 59 and county roads, oil and gas production activities, and wind.

The nearest occupied dwelling to the existing Cordero Rojo Mine is located approximately 1.1 mile southeast of the CMC coal processing facilities, in the NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 30, T.47N., R.70W. The nearest occupied dwelling to the Maysdorf LBA Tract is located approximately 1.3 miles from the western edge of the LBA tract as configured under Alternatives 2 and 3, in the SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 13, T.47N., R.72W.

REFERENCES CITED

All references cited within this supplemental information document are included within Section 6.0 of the Maysdorf EIS document, which is as follows:

Bureau of Land Management (BLM), 2006, Draft Environmental Impact Statement for the Maysdorf Coal Lease Application (WYW 154432), U.S. Department of the Interior, Bureau of Land Management Casper Field Office, Casper, Wyoming, May 2006.