

**MAYSDORF COAL LEASE APPLICATION
FINAL ENVIROMENTAL 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**

April 2007

TABLE OF CONTENTS

EXECUTIVE SUMMARY ES-1

1.0 INTRODUCTION 1-1

 1.1 Background 1-1

 1.2 Purpose and Need for Action..... 1-9

 1.3 Regulatory Authority and Responsibility 1-11

 1.4 Relationship to BLM Policies, Plans, and Programs 1-12

 1.5 Conformance with Existing Land Use Plans 1-12

 1.6 Consultation and Coordination..... 1-15

2.0 PROPOSED ACTION AND ALTERNATIVES 2-1

 2.1 Proposed Action 2-4

 2.1.1 Regulatory Compliance, Mitigation and Monitoring..... 2-9

 2.1.2 Hazardous and Solid Waste 2-15

 2.2 Alternative 1 2-16

 2.3 Alternative 2..... 2-17

 2.4 Alternative 3..... 2-20

 2.5 Alternative 4..... 2-23

 2.6 Alternative 5..... 2-24

 2.7 Summary of Alternatives and Environmental Consequences ... 2-26

 2.7.1 Background 2-26

 2.7.2 Summary of Alternatives 2-27

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES 3-1

 3.1 General Setting 3-5

 3.1.1 Climate and Meteorology 3-5

 3.2 Topography and Physiography 3-5

 3.2.1 Affected Environment 3-5

 3.2.2 Environmental Consequences 3-6

 3.2.2.1 Proposed Action and Alternatives 2 and 3..... 3-6

 3.2.2.2 No Action Alternative 3-8

 3.2.3 Regulatory Compliance, Mitigation and Monitoring..... 3-8

 3.2.4 Residual Impacts 3-8

 3.3 Geology, Mineral Resources, and Paleontology 3-8

 3.3.1 General Geology and Coal Resources 3-8

 3.3.1.1 Affected Environment 3-8

 3.3.1.2 Environmental Consequences 3-11

 3.3.1.2.1 Proposed Action and Alternatives 2 and 3 3-11

 3.3.1.2.2 No Action Alternative 3-11

 3.3.1.3 Regulatory Compliance, Mitigation and Monitoring 3-11

 3.3.1.4 Residual Impacts..... 3-12

 3.3.2 Other Mineral Resources 3-12

 3.3.2.1 Affected Environment 3-12

TABLE OF CONTENTS (Continued)

	3.3.2.1.1	Conventional Oil and Gas	3-12
	3.3.2.1.2	Coal Bed Natural Gas (CBNG) ..	3-12
	3.3.2.1.3	Other Minerals.....	3-13
3.3.2.2		Environmental Consequences	3-14
	3.3.2.2.1	Proposed Action and Alternatives 2 and 3.....	3-14
	3.3.2.2.2	No Action Alternative	3-16
3.3.2.3		Regulatory Compliance, Mitigation and Monitoring	3-16
3.3.2.4		Residual Impacts.....	3-17
3.3.3		Paleontology.....	3-17
	3.3.3.1	Affected Environmental	3-17
	3.3.3.2	Environmental Consequences	3-19
	3.3.3.2.1	Proposed Action and Alternatives 2 and 3.....	3-19
	3.3.3.2.2	No Action Alternative	3-19
3.3.3.3		Regulatory Compliance, Mitigation and Monitoring	3-19
3.3.3.4		Residual Impacts.....	3-20
3.4		Air Quality	3-20
	3.4.1	Background	3-20
	3.4.1.1	Regulatory Framework	3-20
	3.4.1.1.1	Surface Coal Mine Regulatory Framework	3-25
	3.4.1.2	Emission Sources.....	3-28
3.4.2		Particulate Emissions.....	3-29
	3.4.2.1	Affected Environment for Particulate Emissions	3-29
	3.4.2.1.1	Regional Particulate Emissions	3-29
	3.4.2.1.2	Site Specific Particulate Emissions	3-33
3.4.2.2		Environmental Consequences Related to Particulate Emissions.....	3-35
	3.4.2.2.1	Proposed Action and Alternatives 2 and 3.....	3-35
	3.4.2.2.2	No Action Alternative	3-41
3.4.2.3		Regulatory Compliance, Mitigation, and Monitoring for Particulate Emissions	3-43
3.4.3		Emissions of Nitrogen Oxides	3-47
	3.4.3.1	Affected Environment for NO _x Emissions	3-47
	3.4.3.1.1	Regional NO _x Emissions.....	3-47
	3.4.3.1.2	Site Specific NO _x Emissions	3-48
3.4.3.2		Environmental Consequences Related to NO _x Emissions	3-48

TABLE OF CONTENTS (Continued)

	3.4.3.2.1	Proposed Action and Alternatives 2 and 3	3-50
	3.4.3.2.2	No Action Alternative	3-52
	3.4.3.3	Regulatory Compliance, Mitigation, and Monitoring for NO _x Emissions.....	3-52
3.4.4	Visibility.....		3-55
	3.4.4.1	Affected Environment for Visibility.....	3-56
	3.4.4.2	Environmental Consequences for Visibility ..	3-56
	3.4.4.2.1	Proposed Action and Alternatives 2 and 3	3-56
	3.4.4.2.2	No Action Alternative	3-58
	3.4.4.3	Regulatory Compliance, Mitigation, and Monitoring for Visibility Impacts.....	3-58
3.4.5	Acidification of Lakes		3-59
	3.4.5.1	Affected Environment	3-60
	3.4.5.2	Environmental Consequences	3-60
	3.4.5.2.1	Proposed Action and Alternatives 2 and 3	3-60
	3.4.5.2.2	No Action Alternative	3-60
	3.4.5.3	Regulatory Compliance, Mitigation, and Monitoring	3-60
3.4.6	Residual Impacts to Air Quality		3-61
3.5	Water Resources		3-61
	3.5.1	Groundwater.....	3-61
	3.5.1.1	Affected Environment	3-61
	3.5.1.1.1	Recent Alluvium.....	3-61
	3.5.1.1.2	Wasatch Formation.....	3-62
	3.5.1.1.3	Wyodak Coal.....	3-64
	3.5.1.1.4	Subcoal Fort Union Formation	3-66
	3.5.1.1.5	Lance Formation-Fox Hills Sandstone	3-67
	3.5.1.2	Environmental Consequences	3-67
	3.5.1.2.1	Proposed Action and Alternatives 2 and 3	3-67
	3.5.1.2.2	No Action Alternative	3-74
	3.5.1.3	Regulatory Compliance, Mitigation and Monitoring	3-74
3.5.2	Surface Water		3-75
	3.5.2.1	Affected Environment	3-75
	3.5.2.2	Environmental Consequences	3-79
	3.5.2.2.1	Proposed Action and Alternatives 2 and 3	3-79
	3.5.2.2.2	No Action Alternative	3-80
	3.5.2.3	Regulatory Compliance, Mitigation and Monitoring	3-80

TABLE OF CONTENTS (Continued)

3.5.3	Water Rights	3-81
3.5.3.1	Affected Environment	3-81
3.5.3.2	Environmental Consequences	3-82
3.5.3.2.1	Proposed Action and Alternatives 2 and 3	3-82
3.5.3.2.2	No Action Alternative	3-82
3.5.3.3	Regulatory Compliance, Mitigation and Monitoring	3-83
3.5.4	Residual Impacts	3-83
3.6	Alluvial Valley Floors	3-84
3.6.1	Affected Environment	3-84
3.6.2	Environmental Consequences	3-85
3.6.2.1	Proposed Action and Alternatives 2 and 3 ...	3-85
3.6.2.2	No Action Alternative	3-86
3.6.3	Regulatory Compliance, Mitigation and Monitoring....	3-86
3.6.4	Residual Impacts	3-86
3.7	Wetlands	3-86
3.7.1	Affected Environment	3-86
3.7.2	Environmental Consequences	3-88
3.7.2.1	Proposed Action and Alternatives 2 and 3 ...	3-88
3.7.2.2	No Action Alternative	3-89
3.7.3	Regulatory Compliance, Mitigation and Monitoring....	3-89
3.7.4	Residual Impacts	3-89
3.8	Soils	3-89
3.8.1	Affected Environment	3-89
3.8.2	Environmental Consequences	3-90
3.8.2.1	Proposed Action and Alternatives 2 and 3 ...	3-90
3.8.2.2	No Action Alternative	3-91
3.8.3	Regulatory Compliance, Mitigation and Monitoring....	3-92
3.8.4	Residual Impacts	3-92
3.9	Vegetation	3-92
3.9.1	Affected Environment	3-92
3.9.2	Environmental Consequences	3-94
3.9.2.1	Proposed Action and Alternatives 2 and 3 ...	3-94
3.9.2.2	No Action Alternative	3-96
3.9.3	Threatened, Endangered, Proposed, and Candidate Plant Species, and BLM Sensitive Species.....	3-97
3.9.4	Regulatory Compliance, Mitigation and Monitoring....	3-97
3.9.5	Residual Impacts	3-97
3.10	Wildlife	3-98
3.10.1	General Setting	3-98
3.10.1.1	Affected Environment	3-98
3.10.1.2	Environmental Consequences	3-99
3.10.1.2.1	Proposed Action and Alternatives 2 and 3	3-99
3.10.1.2.2	No Action Alternative	3-100

TABLE OF CONTENTS (Continued)

3.10.2	Big Game	3-100
3.10.2.1	Affected Environment	3-100
3.10.2.2	Environmental Consequences	3-102
3.10.2.2.1	Proposed Action and Alternatives 2 and 3	3-102
3.10.2.2.2	No Action Alternative	3-102
3.10.3	Other Mammals	3-103
3.10.3.1	Affected Environment	3-103
3.10.3.2	Environmental Consequences	3-104
3.10.3.2.1	Proposed Action and Alternatives 2 and 3	3-104
3.10.3.2.2	No Action Alternative	3-106
3.10.4	Raptors	3-106
3.10.4.1	Affected Environment	3-106
3.10.4.2	Environmental Consequences	3-107
3.10.4.2.1	Proposed Action and Alternatives 2 and 3	3-107
3.10.4.2.2	No Action Alternative	3-107
3.10.5	Upland Game Birds	3-107
3.10.5.1	Affected Environment	3-107
3.10.5.2	Environmental Consequences	3-110
3.10.5.2.1	Proposed Action and Alternatives 2 and 3	3-110
3.10.5.2.2	No Action Alternative	3-113
3.10.6	Other Birds	3-113
3.10.6.1	Affected Environment	3-113
3.10.6.2	Environmental Consequences	3-115
3.10.6.2.1	Proposed Action and Alternatives 2 and 3	3-115
3.10.6.2.2	No Action Alternative	3-116
3.10.7	Amphibians, Reptiles, and Aquatic Species.....	3-116
3.10.7.1	Affected Environment	3-116
3.10.7.2	Environmental Consequences	3-118
3.10.7.2.1	Proposed Action and Alternatives 2 and 3	3-118
3.10.7.2.2	No Action Alternative	3-118
3.10.8	Threatened, Endangered, Proposed, and Candidate Animal Species, and BLM Sensitive Species.....	3-118
3.10.9	Regulatory Compliance, Mitigation and Monitoring...	3-119
3.10.10	Residual Impacts	3-121
3.11	Land Use and Recreation.....	3-121
3.11.1	Affected Environment	3-121
3.11.2	Environmental Consequences	3-129
3.11.2.1	Proposed Action and Alternatives 2 and 3	3-129
3.11.2.2	No Action Alternative.....	3-130

TABLE OF CONTENTS (Continued)

3.11.3	Regulatory Compliance, Mitigation and Monitoring...	3-130
3.11.4	Residual Impacts	3-131
3.12	Cultural Resources.....	3-131
3.12.1	Affected Environment.....	3-131
3.12.2	Environmental Consequences	3-136
3.12.2.1	Proposed Action and Alternatives 2 and 3	3-136
3.12.2.2	No Action Alternative.....	3-136
3.12.3	Native American Consultation	3-136
3.12.4	Regulatory Compliance, Mitigation and Monitoring...	3-137
3.12.5	Residual Impacts	3-138
3.13	Visual Resources.....	3-138
3.13.1	Affected Environment.....	3-138
3.13.2	Environmental Consequences	3-139
3.13.2.1	Proposed Action and Alternatives 2 and 3..	3-139
3.13.2.2	No Action Alternative.....	3-139
3.13.3	Regulatory Compliance, Mitigation and Monitoring...	3-139
3.13.4	Residual Impacts	3-139
3.14	Noise.....	3-140
3.14.1	Affected Environment.....	3-140
3.14.2	Environmental Consequences	3-140
3.14.2.1	Proposed Action and Alternatives 2 and 3..	3-140
3.14.2.2	No Action Alternative.....	3-142
3.14.3	Regulatory Compliance, Mitigation and Monitoring...	3-142
3.14.4	Residual Impacts	3-142
3.15	Transportation	3-142
3.15.1	Affected Environment.....	3-142
3.15.2	Environmental Consequences	3-144
3.15.2.1	Proposed Action and Alternatives 2 and 3..	3-144
3.15.2.2	No Action Alternative.....	3-146
3.15.3	Regulatory Compliance, Mitigation and Monitoring...	3-146
3.15.4	Residual Impacts	3-146
3.16	Hazardous and Solid Waste.....	3-146
3.16.1	Affected Environment.....	3-146
3.16.2	Environmental Consequences	3-147
3.16.2.1	Proposed Action and Alternatives 2 and 3..	3-147
3.16.2.2	No Action Alternative.....	3-147
3.16.3	Regulatory Compliance, Mitigation and Monitoring...	3-147
3.16.4	Residual Impacts	3-147
3.17	Socioeconomics	3-147
3.17.1	Local Economy.....	3-148
3.17.1.1	Affected Environment.....	3-148
3.17.1.2	Environmental Consequences	3-149
3.17.1.2.1	Proposed Action and Alternatives 2 and 3.....	3-149
3.17.1.2.2	No Action Alternative	3-151

TABLE OF CONTENTS (Continued)

3.17.2 Population 3-151
 3.17.2.1 Affected Environment 3-151
 3.17.2.2 Environmental Consequences 3-152
 3.17.2.2.1 Proposed Action and
 Alternatives 2 and 3 3-152
 3.17.2.2.2 No Action Alternative 3-152
 3.17.3 Employment 3-152
 3.17.3.1 Affected Environment 3-152
 3.17.3.2 Environmental Consequences 3-153
 3.17.3.2.1 Proposed Action and
 Alternatives 2 and 3 3-153
 3.17.3.2.2 No Action Alternative 3-153
 3.17.4 Housing 3-154
 3.17.4.1 Affected Environment 3-154
 3.17.4.2 Environmental Consequences 3-155
 3.17.4.2.1 Proposed Action and
 Alternatives 2 and 3 3-155
 3.17.4.2.2 No Action Alternative 3-156
 3.17.5 Local Government Facilities and Services 3-156
 3.17.5.1 Affected Environment 3-156
 3.17.5.2 Environmental Consequences 3-157
 3.17.5.2.1 Proposed Action and
 Alternatives 2 and 3 3-157
 3.17.5.2.2 No Action Alternative 3-158
 3.17.6 Environmental Justice 3-158
 3.17.6.1 Affected Environment 3-158
 3.17.6.2 Environmental Consequences 3-159
 3.17.6.2.1 Proposed Action and
 Alternatives 2 and 3 3-159
 3.17.6.2.2 No Action Alternative 3-159
 3.17.7 Regulatory Compliance, Mitigation and Monitoring... 3-159
 3.17.8 Residual Effects 3-159
 3.18 The Relationship Between Local Short-term Uses of Man’s
 Environment and the Maintenance and Enhancement of
 Long-term Productivity 3-159
 3.19 Irreversible and Irretrievable Commitments of Resources 3-162
 4.0 CUMULATIVE ENVIRONMENTAL CONSEQUENCES 4-1
 4.1 Past, Present, and Reasonably Foreseeable Development 4-2
 4.1.1 Coal Development 4-4
 4.1.1.1 Coal Mine Development 4-4
 4.1.1.2 Coal-Related Development 4-12
 4.1.1.2.1 Coal Transportation 4-12
 4.1.1.2.2 Electric Power Generation 4-13
 4.1.1.2.3 Transmission Lines 4-14
 4.1.1.2.4 Coal Conversion Technology 4-15

TABLE OF CONTENTS (Continued)

4.1.2	Oil and Gas Development	4-16
4.1.2.1	Conventional Oil and Gas	4-16
4.1.2.2	CBNG Development	4-17
4.1.2.3	Oil and Gas Related Development	4-19
4.1.2.3.1	Pipelines	4-19
4.1.2.3.2	Refineries	4-21
4.1.3	Other Development Activity	4-21
4.1.3.1	Other Mining	4-21
4.1.3.2	Industrial Manufacturing	4-22
4.1.3.3	Reservoirs	4-23
4.1.3.4	Other Non-Energy Development	4-23
4.2	Cumulative Environmental Consequences	4-24
4.2.1	Topography and Physiography	4-27
4.2.2	Geology, Mineral Resources, and Paleontology	4-28
4.2.2.1	Coal	4-28
4.2.2.2	Oil and Gas	4-28
4.2.2.3	Other Mineral Resources	4-29
4.2.2.4	Paleontology	4-29
4.2.3	Air Quality	4-30
4.2.4	Water Resources	4-40
4.2.4.1	Groundwater	4-41
4.2.4.2	Surface Water	4-50
4.2.5	Alluvial Valley Floors	4-53
4.2.6	Soils	4-54
4.2.7	Vegetation, Wetlands and Riparian Areas	4-55
4.2.7.1	Vegetation	4-55
4.2.7.2	Special Status Plant Species	4-56
4.2.7.3	Noxious and Invasive Weed Species	4-56
4.2.7.4	Wetland and Riparian Species	4-58
4.2.8	Wildlife and Fisheries	4-58
4.2.8.1	Game Species	4-59
4.2.8.2	Nongame Species	4-61
4.2.8.3	Fisheries	4-62
4.2.8.4	Special Status Species	4-65
4.2.9	Land Use and Recreation	4-68
4.2.9.1	Grazing and Agriculture	4-69
4.2.9.2	Urban Use	4-69
4.2.9.3	Recreation	4-70
4.2.10	Cultural Resources and Native American Concerns ...	4-72
4.2.10.1	Prehistoric Sites	4-72
4.2.10.2	Historic Sites	4-74
4.2.10.3	Native American Traditional Cultural Places	4-74
4.2.10.4	Site Protection	4-74
4.2.11	Transportation and Utilities	4-75
4.2.12	Socioeconomics	4-77

TABLE OF CONTENTS (Continued)

4.2.12.1 Employment and the Economic Base..... 4-78
 4.2.12.2 Labor Market Conditions 4-80
 4.2.12.3 Personal Income 4-81
 4.2.12.4 Population and Demographics 4-82
 4.2.12.5 Housing 4-85
 4.2.12.6 Public Education 4-87
 4.2.12.7 Facilities and Services 4-89
 4.2.12.8 Fiscal Conditions 4-90
 4.2.12.9 Social Setting 4-92

5.0 CONSULTATION AND COORDINATION..... 5-1

6.0 REFERENCES CITED 6-1

7.0 GLOSSARY 7-1

8.0 INDEX..... 8-1

LIST OF TABLES

Table ES-1. Summary Comparison of Coal Production, Surface Disturbance, Mine Life, and Revenues for Maysdorf LBA Tract and Cordero Rojo Mine ES-6

Table ES-2. Projected Maximum Potential Near-field Impacts ES-18

Table ES-3. Modeled Change in Visibility Impacts at Class I and Sensitive Class II Areas ES-19

Table ES-4. Recent and Projected PRB Population ES-21

Table 1-1. Leases Issued and Exchanges Completed Since Decertification, Powder River Basin, Wyoming 1-5

Table 1-2. Pending LBAs and Exchanges, Powder River Basin, Wyoming.... 1-7

Table 2-1. Regulatory Compliance, Mitigation and Monitoring Measures for Surface Coal Mining Operations Required by SMCRA and State Law for all Alternatives 2-10

Table 2-2. Summary Comparison of Coal Production, Surface Disturbance, Mine Life, and Revenues for Maysdorf LBA Tract and Cordero Rojo Mine 2-28

Table 2-3. Summary Comparison of Magnitude and Duration of Direct and Indirect Impacts for the Proposed Action, Alternatives 2 and 3, and the No Action Alternative for the Maysdorf LBA Tract 2-29

Table 2-4. Summary Comparison of Magnitude and Duration of Cumulative Impacts 2-34

TABLE OF CONTENTS (Continued)

Table 3-1.	Comparison of Existing and Proposed Cordero Rojo Mine Disturbance Area and Mining Operations	3-4
Table 3-2.	Comparison of Average Overburden and Coal Thicknesses and Approximate Postmining Surface Elevation Changes Under the No Action and Action Alternatives	3-7
Table 3-3.	Assumed Background Air Pollutant Concentrations, Applicable AAQS, and PSD Increment Values	3-22
Table 3-4.	Approximate Distances and Directions from the Maysdorf Tract General Analysis Area to PSD Class I and Class II Sensitive Receptor Areas	3-24
Table 3-5.	Summary of WDEQ/AQD Reports on Air Quality Monitoring in Wyoming's PRB, 1980-2004	3-31
Table 3-6.	Annual Ambient NO ₂ Concentration Data	3-54
Table 3-7.	2001 Through 2004 Annual Mean NO ₂ Concentration Data	3-55
Table 3-8.	Existing Acid Neutralizing Capacity in Sensitive Lakes.....	3-61
Table 3-9.	Water Supply Wells Possibly Subject to Drawdown if the Maysdorf LBA Tract is Mined.....	3-83
Table 3-10.	Vegetation Types Identified and Mapped Within the Maysdorf LBA Tract Vegetation Analysis Area	3-93
Table 3-11.	Distribution of Surface Ownership Within the Maysdorf LBA Tract as Applied for Under the Proposed Action and Area Added Under Alternatives 2 and 3	3-121
Table 3-12.	Maysdorf LBA Tract Federal Oil and Gas Lessees of Record ...	3-125
Table 3-13.	Sites and Isolated Finds in the Class III Cultural Resource Inventory of the Maysdorf LBA Tract Survey Area	3-135
Table 3-14.	Project Socioeconomic Impacts from Leasing the Maysdorf LBA Tract Under the Proposed Action or Alternatives 2 and 3	3-151
Table 4-1.	Status and Ownership of Wyoming PRB Coal Mines for the PRB Coal Review Baseline Year	4-6
Table 4-2.	Current and Projected Wyoming PRB Coal Mine Development, Lower Production Scenario	4-10
Table 4-3.	Current and Projected Wyoming PRB Coal Mine Development, Upper Production Scenario	4-11
Table 4-4.	Current and Projected Wyoming PRB Coal-Related Development Scenario	4-13
Table 4-5.	Past, Present, and Projected Wyoming PRB Coal Mine and Coal-Related Development Scenario.....	4-17
Table 4-6.	Current and Projected Wyoming PRB Conventional Oil and Gas Development Scenario	4-18
Table 4-7.	Current and Projected CBNG Development Scenario for the Wyoming PRB	4-20
Table 4-8.	Wyoming PRB Conventional Oil and Gas, CBNG, and Related Development Disturbance and Water Projection	4-20
Table 4-9.	Current and Projected Wyoming PRB Total Development Scenario – Task 3 Study Area	4-27

TABLE OF CONTENTS (Continued)

Table 4-10. Projected Maximum Potential Near-field Impacts 4-33

Table 4-11. Maximum Predicted PSD Class I and Sensitive Class II Area
Impacts..... 4-36

Table 4-12. Modeled Change in Visibility Impacts at Class I and Sensitive
Class II Areas 4-37

Table 4-13. Predicted Total Cumulative Change in Acid Neutralizing
Capacity of Sensitive Lakes 4-39

Table 4-14. Recoverable Groundwater in the Fort Union/Wasatch Aquifer
System..... 4-42

Table 4-15. Water Use as of 2002 in the Powder/Tongue River Basin..... 4-51

Table 4-16. Surface Water Availability in the Powder/Tongue River Basin .. 4-51

Table 4-17. Water Use as of 2002 in the Northeast Wyoming River Basins . 4-52

Table 4-18. Surface Water Availability in the Northeast Wyoming River
Basins..... 4-52

Table 4-19. Potential Cumulative Disturbance to Pronghorn Ranges from
Development Activities—Lower and Upper Coal Production
Scenarios 4-60

Table 4-20. Potential Cumulative Disturbance to White-tailed Deer Ranges
from Development Activities—Lower and Upper Coal Production
Scenarios 4-60

Table 4-21. Potential Cumulative Disturbance to Mule Deer Ranges from
Development Activities—Lower and Upper Coal Production
Scenarios 4-60

Table 4-22. Potential Cumulative Disturbance to Elk Ranges from
Development Activities—Low and High Development
Scenarios 4-61

Table 4-23. Potential Cumulative Impacts to Greater Sage-Grouse Leks
from Coal Mine Development—Upper and Lower Coal
Production Development Scenarios..... 4-68

Table 4-24. Land Use by Surface Ownership..... 4-69

Table 4-25. AUMs and Acres of Cropland Estimated Unavailable on
Lands Disturbed and Not Yet Reclaimed as a Result of
Development Activities 4-70

Table 4-26. Square Miles of Projected Cumulative Disturbance and
Number of Potentially Affected Cultural Resource Sites in
the PRB Coal Review Task 3 Study Area – Lower and Upper
Coal Production Scenarios..... 4-73

Table 4-27. PRB Rail Lines Coal Hauling Capacity and Projected Use..... 4-77

Table 4-28. Recent and Projected PRB Population 4-84

Table 4-29. Demographic Characteristics..... 4-86

Table 4-30. Total Housing Stock in 2000 4-86

Table 4-31. Monthly Housing Rents in 2003 in the PRB Study Area..... 4-86

Table 4-32. Summary of Mineral Development Tax Revenues Associated
with Energy Resource Production Under the Lower Production
Scenario..... 4-93

TABLE OF CONTENTS (Continued)

Table 4-33. Summary of Mineral Development Tax Revenues Associated with Energy Resource Production Under the Upper Production Scenario..... 4-93

LIST OF FIGURES

Figure ES-1. General Location Map with Federal Coal Leases and LBA TractsES-2

Figure ES-2a. Maysdorf LBA Alternative Tract ConfigurationsES-3

Figure ES-2b. Maysdorf LBA Preferred Alternative Tract ConfigurationES-3

Figure ES-3. Maximum Modeled PM₁₀ and NO_x Concentrations at the Cordero Rojo Mine Ambient Air Boundary for the Year 2007ES-10

Figure ES-4. Life of Mine Drawdown Map, Resulting from Currently Approved Mining With Addition of the Maysdorf LBA Tract.....ES-12

Figure 1-1. General Location Map with Federal Coal Leases and LBA Tracts 1-2

Figure 1-2. CMC and CRI Mines' Federal Coal Leases and Maysdorf LBA Tract as Applied for 1-8

Figure 2-1a. Maysdorf LBA Alternative Tract Configurations 2-2

Figure 2-1b. Maysdorf LBA Preferred Alternative Tract Configuration 2-2

Figure 3-1. General Analysis Area 3-3

Figure 3-2. Stratigraphic Relationships and Hydrologic Characteristics of Upper Cretaceous, Lower Tertiary, and Recent Geologic Units, PRB, Wyoming..... 3-9

Figure 3-3. Active PM₁₀ Monitoring Stations in Northeastern Wyoming..... 3-30

Figure 3-4. Wind Rose, Air Quality and Meteorological Stations at the Cordero Rojo Mine 3-34

Figure 3-5. Annual Coal Production and Overburden Removal vs. Ambient Particulates for Cordero Rojo Mine (1995 through 2004)..... 3-36

Figure 3-6. Maximum Modeled PM₁₀ and NO_x Concentrations at the Cordero Rojo Mine Ambient Air Boundary for the Year 2005 3-38

Figure 3-7. Maximum Modeled PM₁₀ and NO_x Concentrations at the Cordero Rojo Mine Ambient Air Boundary for the Year 2007 3-39

Figure 3-8. Residences, School Bus Stops, Public Roads, and other Publicly Accessible Facilities Within and Adjacent to the Maysdorf LBA Tract 3-42

Figure 3-9. Visibility in the Badlands and Bridger Wilderness Area 3-57

TABLE OF CONTENTS (Continued)

Figure 3-10. Locations of Currently Active Groundwater Monitoring and Water Supply Wells at the Cordero Rojo Mine 3-68

Figure 3-11. Life of Mine Drawdown Map, Resulting from Currently Approved Mining With Addition of the Maysdorf LBA Tract..... 3-71

Figure 3-12. Surface Water Features Within and Adjacent to the Maysdorf LBA Tract 3-76

Figure 3-13. Raptor Nest Sites, Sage Grouse Leks, and Prairie Dog Towns Within and Adjacent to the Maysdorf LBA Alternative Tract Configurations 3-105

Figure 3-14. Average Male Sage Grouse Lek Attendance Within the Northeast Wyoming Local Working Group Area 3-111

Figure 3-15. Average Male Sage Grouse Lek Attendance Statewide and Within the Northeast Wyoming Local Sage Grouse Working Group Area and the Thunder Basin National Grasslands 3-111

Figure 3-16. Surface Ownership Within the Maysdorf LBA Tract..... 3-122

Figure 3-17. Oil and Gas Ownership Within the Maysdorf LBA Tract 3-124

Figure 3-18. Relationship Between A-Scale Decibel Readings and Sounds of Daily Life..... 3-141

Figure 3-19. Transportation Facilities Within and Adjacent to the Maysdorf LBA Tract..... 3-143

Figure 3-20. Oil and Gas Pipelines Within and Adjacent to the Maysdorf LBA Tract..... 3-145

Figure 3-21. Estimated Wyoming and Federal Revenues from 2004 Coal Production in Campbell County 3-150

Figure 4-1. Wyoming Study Area for PRB Coal Review Studies Evaluating Current and Projected Levels of Development 4-3

Figure 4-2. Tons of Federal Coal Leased Versus Tons of Coal Mined Since 1990 4-5

Figure 4-3. Projected Total Coal Production from Campbell and Converse Counties Under the Lower and Upper Production Scenarios 4-9

Figure 4-4. Wyoming Task 3 Study Area for PRB Coal Review Studies Evaluating Projected Environmental Consequences 4-26

Figure 4-5. Extrapolated Extent of Cumulative Drawdown Within the Wyodak Coal Aquifer in the South Gillette Subregion 4-45

Figure 4-6. Projected Campbell County Population and Employment to 2020..... 4-84

Figure 4-7. Projected Housing Demand in the PRB Study Area Under the Lower Production Scenario 4-87

Figure 4-8. Projected School Enrollment Trends to 2020 Under the Lower Production Scenario 4-89

TABLE OF CONTENTS (Continued)

LIST OF APPENDICES

Appendix A	Federal And State Permitting Requirements and Agencies
Appendix B	Unsuitability Criteria for the Maysdorf LBA Tract
Appendix C	Coal Lease-By-Application Flow Chart
Appendix D	Bureau of Land Management Special Coal Lease Stipulations and Form 3400-12 Coal Lease
Appendix E	Biological Assessment for the Maysdorf LBA Tract EIS
Appendix F	BLM Sensitive Species Evaluation for the Maysdorf Coal Lease Application EIS
Appendix G	CBNG Wells Capable of Production on or in Sections Adjacent to the Maysdorf LBA Tract
Appendix H	Comment Letters on the Draft EIS And Responses