

TABLE OF CONTENTS

ABSTRACT	ii
SUMMARY	iii
CHAPTER 1—PURPOSE AND NEED.....	1-1
1.1 DESCRIPTION OF THE PLANNING AREA	1-1
1.2 INTERRELATIONSHIP WITH THE GREEN RIVER RMP	1-2
1.3 PURPOSE AND NEED FOR THE JMH CAP	1-2
1.4 BLM PLANNING PROCESS	1-3
1.5 PLANNING ISSUES AND CRITERIA	1-4
1.5.1 Planning Issues.....	1-4
1.5.2 Planning Criteria	1-5
1.6 RELEVANT STATUTES, LIMITATIONS, AND GUIDELINES	1-6
1.6.1 Environmental Policy.....	1-6
1.6.2 Land Use and Natural Resources Management	1-6
1.6.3 Air Quality	1-7
1.6.4 Water Quality	1-8
1.6.5 Cultural Resources	1-8
1.6.6 Hazardous Materials.....	1-9
CHAPTER 2—DESCRIPTION OF ALTERNATIVES	2-1
2.1 DEVELOPMENT OF ALTERNATIVES	2-1
2.1.1 Alternatives Development Process.....	2-1
2.1.2 Management Objectives	2-2
2.1.3 Alternatives and Management Options Considered But Eliminated From Detailed Analysis	2-3
2.2 MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES.....	2-7
2.2.1 Land and Water Resources Management.....	2-7
2.2.2 Heritage Resources Management.....	2-13
2.2.3 Travel Management, Access, and Realty	2-15
2.2.4 Recreation Resources Management	2-16
2.2.5 Minerals and Alternative Energy Resources Management	2-16
2.2.6 Visual Resources Management	2-18
2.2.7 Special Management Area Management.....	2-18
2.2.8 Air Resources Management	2-18
2.3 NO ACTION ALTERNATIVE.....	2-19
2.3.1 Land and Water Resources Management.....	2-19
2.3.2 Heritage Resources Management.....	2-24
2.3.3 Travel Management, Access, and Realty	2-25
2.3.4 Recreation Resources Management	2-26
2.3.5 Minerals and Alternative Energy Resources Management	2-27
2.3.6 Visual Resources Management	2-30
2.3.7 Special Management Area Management.....	2-31
2.4 ALTERNATIVE 1	2-32
2.4.1 Land and Water Resources Management.....	2-32
2.4.2 Heritage Resources Management.....	2-36
2.4.3 Travel Management, Access, and Realty	2-36
2.4.4 Recreation Resources Management	2-38
2.4.5 Minerals and Alternative Energy Resources Management	2-38
2.4.6 Visual Resources Management	2-40
2.4.7 Special Management Area Management.....	2-41

2.5 ALTERNATIVE 2	2-42
2.5.1 Land and Water Resources Management.....	2-42
2.5.2 Heritage Resources Management.....	2-46
2.5.3 Travel Management, Access, and Realty	2-48
2.5.4 Recreation Resources Management	2-49
2.5.5 Minerals and Alternative Energy Resources Management	2-50
2.5.6 Visual Resources Management	2-51
2.5.7 Special Management Area Management.....	2-52
2.6 ALTERNATIVE 3	2-53
2.6.1 Land and Water Resources Management.....	2-53
2.6.2 Heritage Resources Management.....	2-57
2.6.3 Travel Management, Access, and Realty	2-59
2.6.4 Recreation Resources Management	2-60
2.6.5 Minerals and Alternative Energy Resources Management	2-61
2.6.6 Visual Resources Management	2-64
2.6.7 Special Management Area Management.....	2-65
2.7 PREFERRED ALTERNATIVE.....	2-66
2.7.1 Land and Water Resources Management.....	2-67
2.7.2 Heritage Resources Management.....	2-76
2.7.3 Travel Management, Access, and Realty	2-78
2.7.4 Recreation Resources Management	2-80
2.7.5 Minerals and Alternative Energy Resources Management	2-81
2.7.6 Visual Resources Management	2-86
2.7.7 Special Management Area Management.....	2-87
2.7.8 Air Resources Management	2-88
CHAPTER 3—AFFECTED ENVIRONMENT	3-1
3.1 LAND AND WATER RESOURCES.....	3-1
3.1.1 Fire Management	3-1
3.1.2 Water Resources.....	3-2
3.1.3 Wild Horses.....	3-6
3.1.4 Livestock Grazing	3-7
3.1.5 Vegetation	3-9
3.1.6 Wildlife	3-14
3.2 HERITAGE RESOURCES	3-23
3.2.1 Historic Trails.....	3-24
3.2.2 Native American Sites.....	3-26
3.2.3 Unique Geological Features	3-26
3.2.4 Paleontological and Archaeological Resources	3-27
3.2.5 Other Cultural and Historical Resources.....	3-28
3.3 TRAVEL MANAGEMENT, ACCESS, AND REALTY	3-30
3.3.1 Travel Management	3-30
3.3.2 Off-Highway Use	3-31
3.3.3 Access and Realty Actions.....	3-32
3.3.4 Hazardous Materials.....	3-34
3.4 RECREATION RESOURCES	3-34
3.4.1 Off-Highway Vehicle Use.....	3-35
3.4.2 Hunting.....	3-36
3.4.3 Other Dispersed Uses	3-37
3.4.4 Special Recreational Management Areas.....	3-37
3.5 MINERALS AND ENERGY RESOURCES.....	3-37
3.5.1 Regional Geologic Setting	3-37

3.5.2	Present-Day Land Forms.....	3-39
3.5.3	Geologic Hazards	3-39
3.5.4	Leasable Minerals	3-40
3.5.5	Saleable Minerals.....	3-43
3.5.6	Locatable Minerals.....	3-43
3.5.7	Alternative Energy Resources	3-45
3.6	VISUAL RESOURCES.....	3-45
3.6.1	Visual Resource Inventory	3-45
3.6.2	Visual Resource Management.....	3-46
3.7	SPECIAL MANAGEMENT AREAS.....	3-47
3.7.1	Wilderness Study Areas	3-47
3.7.2	Areas of Critical Environmental Concern	3-50
3.7.3	Special Recreation Management Areas.....	3-52
3.7.4	Red Desert Watershed Special Management Area.....	3-53
3.8	AIR RESOURCES	3-54
3.8.1	Climate and Meteorology.....	3-54
3.8.2	Air Quality	3-55
3.9	SOCIOECONOMICS	3-59
3.9.1	County Characteristics	3-59
3.9.2	Demographic Characteristics	3-59
3.9.3	Economic Characteristics.....	3-60
3.9.4	Property Valuation and Taxation	3-63
3.10	ENVIRONMENTAL JUSTICE	3-66
CHAPTER 4—ENVIRONMENTAL CONSEQUENCES		4-1
4.1	TYPES OF IMPACTS	4-1
4.2	DETERMINATION OF SIGNIFICANCE	4-2
4.3	ANALYSIS METHODS.....	4-3
4.4	LAND AND WATER RESOURCES	4-4
4.4.1	Potential Impacts on Fire Management.....	4-4
4.4.2	Potential Impacts on Water Resources	4-11
4.4.3	Impacts on Wild Horses	4-24
4.4.4	Impacts on Livestock Grazing.....	4-32
4.4.5	Impacts on Vegetation Management.....	4-45
4.4.6	Impacts on Wildlife	4-61
4.5	HERITAGE RESOURCES	4-88
4.5.1	Potential Impacts on Heritage Resources	4-88
4.6	TRAVEL MANAGEMENT, ACCESS, AND REALTY	4-103
4.6.1	Potential Impacts on Travel Management, Access, and Realty	4-103
4.7	RECREATION RESOURCES	4-111
4.7.1	Potential Impacts on Recreation Resources	4-112
4.8	MINERALS AND ALTERNATIVE ENERGY RESOURCES.....	4-120
4.8.1	Potential Impacts on Leasable Fluid Minerals	4-121
4.8.2	Leasable Solid Minerals	4-127
4.8.3	Locatable Minerals.....	4-130
4.8.4	Saleable Minerals	4-132
4.8.5	Potential Impacts on Alternative Energy Development.....	4-135
4.8.6	Cumulative Impacts	4-135
4.9	VISUAL RESOURCES.....	4-136
4.9.1	Potential Impacts on Visual Resources	4-136
4.10	SPECIAL MANAGEMENT AREAS.....	4-147
4.10.1	Potential Impacts on Special Management Areas	4-147

4.11 AIR RESOURCES	4-156
4.11.1 Potential Impacts on Air Quality.....	4-157
4.12 SOCIOECONOMICS	4-160
4.12.1 Significance Criteria.....	4-160
4.12.2 Analysis Methods.....	4-161
4.12.3 Impacts Common to All Alternatives.....	4-164
4.12.4 Potential Impacts on Employment	4-165
4.12.5 Potential Impacts on Earnings.....	4-166
4.12.6 Potential Fiscal Impacts	4-167
4.12.7 Cumulative Impacts	4-168
CHAPTER 5—CONSULTATION AND COORDINATION	5-1
5.1 CONSULTATION AND COORDINATION.....	5-3
5.1.1 Cooperating Agencies	5-3
5.1.2 Coordination and Consistency	5-4
5.1.3 Native American Interests.....	5-6
5.2 PUBLIC PARTICIPATION.....	5-6
5.2.1 Public Meetings.....	5-6
5.2.2 Mailing List.....	5-7
5.2.3 Newsletters	5-8
5.2.4 Website.....	5-8
5.3 DISTRIBUTION LIST	5-8
5.4 LIST OF PREPARERS.....	5-11
ACRONYMS	A-1
GLOSSARY	G-1
LITERATURE CITED	L-1

LIST OF FIGURES

Figure 1. Structural Elements of the Greater Green River Basin.....	F-1
Figure 2. Generalized Stratigraphic Nomenclature Chart.....	F-2
Figure 3. Land Ownership—1996	F-3
Figure 4. Population Estimates: 1980–2000	F-3
Figure 5. Unemployment Rate: 1991–2000	F-4
Figure 6. Employment by Industry in Study Area: 1999	F-4
Figure 7. Gross Earnings by Industry in Study Area: 1999	F-5
Figure 8. State Assessed Property	F-5
Figure 9. Locally Assessed Property.....	F-6
Figure 10. Estimated Ad Valorem Taxes 1985–2000 (1996\$).....	F-7
Figure 11. Percent of Minority Population by County: 2000.....	F-8
Figure 12. Median Household Income (\$): 2000/Poverty Rate (%): 2000	F-9
Figure 13. Total Employment Trend.....	F-10
Figure 14. Total Real Earnings Trend (2001 dollars)	F-10
Figure 15. Estimated Ad Valorem Taxes for Natural Gas Production (2001 dollars)	F-11
Figure 16. Average Annual Employment by Alternative	F-11
Figure 17. Total Earnings by Alternative.....	F-12
Figure 18. Estimated Ad Valorem Tax Revenues From JMH 2003–2020.....	F-13

LIST OF TABLES

Table 1-1. Land and Mineral Ownerships and Administrative Jurisdictions Within the JMH CAP Planning Area.....	1-10
Table 2-1. Summary Comparison of Alternatives	2-90

Table 2-2. Areas of Fluid Mineral Lease Conditional Requirements by Hydrocarbon Potential	2-164
Table 2-3. JMH CAP Wildlife Limitations by Alternative.....	2-171
Table 2-4. Summary of Impacts.....	2-172
Table 3-1. Estimated Acres for JMH Resources	3-69
Table 3-2. PFC Assessment	3-3
Table 3-3. JMH Stream PFC Summary for Lotic Systems	3-3
Table 3-4. JMH Stream PFC Summary for Lentic Systems	3-4
Table 3-5. Suggested Use For Streams Within the JMH Planning Area	3-5
Table 3-6. Underground Water Class	3-72
Table 3-7. Allotment/Operator Data	3-75
Table 3-8. Vegetation Communities and Associated Species.....	3-9
Table 3-9. Wyoming BLM Sensitive Plant Species.....	3-12
Table 3-10. Noxious and Invasive Weeds	3-13
Table 3-11. Big Game Habitat Use and Size	3-15
Table 3-12. Raptor Species	3-19
Table 3-13. Waterways and Fish Species	3-20
Table 3-14. Threatened and Endangered Wildlife Species.....	3-21
Table 3-15. Wyoming BLM Sensitive Wildlife Species	3-22
Table 3-16. Road Classifications	3-31
Table 3-17. OHV Use Designations	3-32
Table 3-18. Estimated Annual Recreational Visitor Days	3-35
Table 3-19. Hunting Seasons [2000]*.....	3-36
Table 3-20. Estimated Annual Average Hunting Days.....	3-37
Table 3-21. Wells Drilled in the JMH.....	3-77
Table 3-22. Visual Resource Management Class Objectives	3-47
Table 3-23. Wilderness Study Area Determinations.....	3-48
Table 3-24. Concentrations of Criteria Air Pollutants	3-55
Table 3-25. Air Quality Summary	3-58
Table 3-26. Estimated Personal Income	3-60
Table 3-27. Assessed Value of Oil and Gas Production and Property Fiscal Year 2001	3-63
Table 3-28. Estimated Mineral Ad Valorem Tax Revenues Fiscal Year 2001	3-64
Table 3-29. Estimated Ad Valorem Tax Revenues on Oil and Gas Property Fiscal Year 2001	3-64
Table 3-30. Oil and Gas Tax Revenues As Percentage of Total County Property Taxes Fiscal Year 2001	3-64
Table 3-31. Total Severance Tax Distributions For Government Entities Fiscal Year 2001	3-65
Table 3-32. Severance Tax Revenue Fiscal Year 2001	3-65
Table 3-33. Estimated Ad Valorem Tax-Production From JMH.....	3-66
Table 3-34. Estimated Severance Tax-Production from JMH	3-66
Table 3-35. Estimated Federal Royalties Production From JMH	3-66
Table 3-36. Percent Population By County	3-67
Table 4-1. Summary of Visual Resource Management Classifications.....	4-170
Table 4-2. Summary of Special Management Area Designations	4-172
Table 4-3. Summary of Oil and Gas Leases	4-173
Table 4-4. Summary of Coal and Sodium Exploration.....	4-174
Table 4-5. Summary of Coal Occurrence and Development Potential	4-175
Table 4-6. Summary of Salable Mineral Development	4-176
Table 4-7. Summary of Locatable Mineral Development	4-177
Table 4-8. Summary of Surface Disturbance and Seasonal Limitations.....	4-178

Table 4-9. Summary of Off-Highway Vehicle (OHV) Use Designations	4-181
Table 4-10. Summary of Rights-of-Way (ROW) Limitations	4-183
Table 4-11. Grazing Utilization	4-185
Table 4-12. Total Traffic Miles by Year for Oil and Gas Development.....	4-186
Table 4-13. Economic Model Inputs.....	4-162
Table 4-14. Estimated Oil and Gas Development for JMH	4-162
Table 4-15. TOTAL ^a Estimated Mineral Royalties and Taxes From JMH ^b (2001 dollars)	4-167
Table 5-1. JMH CAP Draft EIS (2000) Public Events	5-1
Table 5-2. JMH CAP Supplemental Draft EIS Public Events	5-2
Table 5-3. Key Coordination Actions	5-4
Table 5-4. List of Preparers	5-11

LIST OF MAPS

Map 1 – Jack Morrow Hills Planning Area Location	
Map 2 – Recreation Sites and Points of Interest	
Map 3 – Land Ownership	
Map 4 – Mineral Status	
Map 5 – No Action Locatable Minerals	
Map 6 – No Action Coal Occurrence and Development Potential Area	
Map 7 – No Action Surface Disturbance and Seasonal Limitations	
Map 8 – No Action Rights-of-Way Limitations	
Map 9 – No Action OHV Use Designations	
Map 10 – No Action Oil and Gas Leases	
Map 11 – No Action Coal and Sodium Exploration	
Map 12 – No Action Areas Closed to Mineral Material Sales	
Map 13 – No Action Visual Resource Management Classifications	
Map 14 – Special Management Areas	
Map 15 – Sensitive Plant Resources	
Map 16 – Alternative 1 Surface Disturbance and Seasonal Limitations	
Map 17 – Sensitive Avian Resources	
Map 18 – Alternative 1 Rights-of-Way Limitations	
Map 19 – Alternative 1 OHV Use Designations	
Map 20 – Alternative 1 Oil and Gas Leases	
Map 21 – Alternative 1 Coal and Sodium Exploration	
Map 22 – Alternative 1 Coal Occurrence and Development Potential Area	
Map 23 – Alternative 1 Locatable Minerals	
Map 24 – Alternative 1 Areas Closed to Mineral Material Sales	
Map 25 – Alternative 1 Visual Resource Management Classifications	
Map 26 – Alternative 1 Areas of Critical Environmental Concern	
Map 27 – Alternative 2 Rights-of-Way Limitations	
Map 28 – Alternative 2 Surface Disturbance and Seasonal Limitations	
Map 29 – Alternative 2&3 Sample Travel Plan	
Map 30 – Alternative 2 OHV Use Designations	
Map 31 – Alternative 2 Oil and Gas Leases	
Map 32 – Alternative 2 Coal and Sodium Exploration	
Map 33 – Alternative 2 Coal Occurrence and Development Potential Area	
Map 34 – Alternative 2 Locatable Minerals	
Map 35 – Alternative 2 Areas Closed to Mineral Material Sales	
Map 36 – Alternative 2 Visual Resource Management Classifications	
Map 37 – Alternative 2 Special Management Area Expansions	

- Map 38 – Alternative 3 Wild Horse Herd Management Area
 Map 39 – Alternative 3 Surface Disturbance and Seasonal Limitations
 Map 40 – Alternative 3 Rights-of-way Limitations
 Map 41 – Alternative 3 OHV Use Designations
 Map 42 – Alternative 3 Oil and Gas Leases
 Map 43 – Alternative 3 Coal and Sodium Exploration
 Map 44 – Alternative 3 Coal Occurrence and Development Potential Area
 Map 45 – Alternative 3 Locatable minerals
 Map 46 – Alternative 3 Areas Closed to Mineral Material Sales
 Map 47 – Alternative 3 Visual Resource Management Classifications
 Map 48 – Alternative 3 Special Management Area Expansions
 Map 49 – Preferred Alternative Rights-of-Way Limitations
 Map 50 – Preferred Alternative Surface Disturbance and Seasonal Limitations
 Map 51 – Sensitive Big Game Areas
 Map 52 – Preferred Alternative OHV Use Designations
 Map 53 – Preferred Alternative Locatable Minerals
 Map 54 – Preferred Alternative Oil and Gas Leases
 Map 55 – Preferred Alternative Coal and Sodium Exploration
 Map 56 – Coal and Sodium Development Potential
 Map 57 – Preferred Alternative Coal Occurrence and Development Potential Area
 Map 58 – Preferred Alternative Areas Closed To Mineral Material Sales
 Map 59 – Preferred Alternative Visual Resource Management Classifications
 Map 60 – Preferred Alternative Special Management Area Additions
 Map 61 – Water Resources and Watersheds
 Map 62 – Wild Horses Herd Management Area
 Map 63 – Grazing Allotments and Improvements
 Map 64 – Heritage Resources
 Map 65 – Existing Roads
 Map 66 – Geologic Hazards
 Map 67 – Oil and Gas Leases
 Map 68 – Federal Units
 Map 69 – Oil and Gas Development Potential
 Map 70 – Coalbed Methane Development Potential
 Map 71 – Mining Claim Activity

LIST OF APPENDICES

Appendix 1–Planning Criteria	A1-1
Appendix 2–Green River Land Use Plan(s) Objectives and Actions	A2-1
Appendix 3–Biological Assessment	A3-1
Appendix 4–Procedures for Processing Applications in Areas of Seasonal Restriction	A4-1
Appendix 5–WY BLM Mitigation Guidelines	A5-1
Appendix 6–Standard Practices, BMPS, and Guidelines for Surface Disturbing Activities	A6-1
Appendix 7–Heritage Resources Management.....	A7-1
Appendix 8–Standard Operating Procedures for Range Improvements and Vegetation Manipulation	A8-1
Appendix 9–Reclamation and Monitoring.....	A9-1
Appendix 10–Wyoming Standards for Healthy Rangelands	A10-1
Appendix 11–Wyoming State Species of Concern	A11-1
Appendix 12–Draft Transportation Plan.....	A12-1
Appendix 13–Hydrocarbon Occurrence and Development Potential Report	A13-1
Appendix 14–Oil and Gas Operations	A14-1

Appendix 15–Air Quality Regulations	A15-1
Appendix 16–Socioeconomic Data and Assumptions	A16-1
Appendix 17–Preliminary Adaptive Management Implementation Strategy	A17-1
Appendix 18–Wilderness Study Areas and Proposals	A18-1

APPENDIX MAPS

- Map A13-1 – Oil and Gas Development Potential
- Map A13-2 – Federal Units
- Map A13-3 – Abandoned Oil and Gas Wells
- Map A13-4 – Coalbed Methane Development Potential
- Map A17-1 – Preferred Alternative Adaptive Management Implementation
- Map A18-1 – Wilderness Study Areas and Proposals