

## CHAPTER 5.0 - CONSULTATION AND COORDINATION

### 5.1 INTRODUCTION

An Interdisciplinary Team of BLM resource specialists and Maxim Technologies staff prepared this EIS. The OSM, WDEQ/LQD, and Wyoming State Planning Office were formal cooperating agencies.

### 5.2 PUBLIC PARTICIPATION SUMMARY

An early and open process was used for determining the scope of issues to be addressed during the EIS planning process. Consultation and coordination efforts were ongoing throughout the process of preparing this EIS. *Federal Register* notices, news releases, a public meeting, and individual meetings with interested publics were also implemented. An NOI for the preparation of this EIS was published in the *Federal Register* on January 4, 2005. The NOI initiated the public scoping process by inviting participation in identifying planning issues and criteria. Information about the planning process was provided during an open house on January 26, 2005 at the BLM RSFO in Rock Springs, Wyoming. Questions were answered during a public meeting, which immediately followed the open house. Issues, concerns, and comments were taken in writing by e-mail, mail, facsimile, and hand delivery. Eleven letters were received during the public scoping period (January 4 – February 4, 2005). The scoping notice mailing distribution list is included below:

#### Government Offices

- BLM, Wyoming State Office
- U.S. Department of the Army, Corps of Engineers
- USFWS
- Office of the Governor, State of Wyoming
- WDEQ
- WGFD (Cheyenne, Green River)
- Wyoming State Clearinghouse
- Federal Land Planning Office

#### Elected and Other Officials

- Mayors of Rock Springs, Green River, Superior
- State Representatives: Stephen Watt, Bill Thompson, Pete Jorgensen, Mick Powers, Marty Martin
- State Senators: Rae Lynn Job, Tex Boggs, Stan Cooper
- Sweetwater County Commissioners
- Sweetwater County Libraries, Green River, Rock Springs
- Sweetwater County Planner
- U.S. Congresswoman Barbara Cubin, Bonnie Cannon, Representative
- U.S. Senator Craig Thomas, Pati Smith, Representative
- U.S. Senator Mike Enzi, Lyn Shanaghy, Representative

#### Oil and Gas Lessees (certified)

- Barlow & Haun Inc.
- Anadarko E&P Company

- Questar Exploration & Production Company
- NPC Incorporated
- ABO Petroleum Corporation Andex Resources LLC
- MYCO Industries
- Sharbro Oil & Gas Company Westport Oil & Gas Company Yates Drilling Company
- Yates Petroleum Corporation

Public Land Users and User Groups

- Affected grazing permittees in the Rock Springs Allotment
- Biodiversity Conservation Alliance
- Environmental Defense Fund
- Independent Petroleum Association of Mountain States
- National Wildlife Federation
- Native American Tribes: Eastern Shoshone, Northern Ute, Northern Arapaho, Shoshone-Bannock
- People for the West
- Petroleum Association of Wyoming
- Rocky Mountain Elk Foundation
- Sierra Club, Northern Plains Representative
- Southwest Wyoming Industrial Association
- Wilderness Society
- Wyoming Association of Professional Archaeologists
- Sierra Club
- Wyoming Outdoor Council
- Wyoming Public Lands Council
- Wyoming Wildlife Federation

Newspapers

- Casper Star-Tribune
- Green River Star
- Kemmerer Gazette
- Pinedale Roundup
- Rock Springs Daily Rocket-Miner
- Sublette Examiner
- Uinta County Herald
- Wyoming State Journal

Radio Stations

- Cowboy News Network - Cheyenne
- KMER/KOAX/KDWY - Kemmerer
- KOTB/KEVA – Evanston
- KPIN – Pinedale

- KQSW/KRKKIKSIT - Rock Springs
- KUGR/KYCS/KFRZ - Green River
- Public Radio – Laramie

Television Stations

- KCWY-TV - Casper
- KGWC-TV - Casper
- KGWN - Cheyenne
- KTWO-TV - Casper
- KWFY-TV - Casper

### 5.3 COOPERATING AGENCIES AND OTHER ENTITIES

Below is a list of personnel contacted or consulted during preparation of this EIS and includes scoping respondents. Consultation would be an on-going effort throughout the EIS process.

Persons, Groups, and Governmental Agencies Consulted in EIS Preparation

- Wyoming Diversity Database
- United States EPA, Region 8
- Wyoming Department of Environmental Quality, Land Quality Division
- Wyoming Department of Environmental Quality, Air Quality Division
- BLM Wyoming State Office
- BLM Denver Regional Office
- United States Fish and Wildlife Service

In keeping with the provisions of NEPA and FLPMA, BLM established opportunities for interactions with tribal officials. The FLPMA, Title II, Section 202, provides guidance for coordinating planning efforts with American Indian tribes, other federal departments, and agencies of state and local governments. Local governments, tribal governments, and federal and state agencies with resource management interests or responsibilities were informed of the project planning efforts and encouraged to participate. Native American Tribe representatives that were sent letters requesting consultation included:

Chairman Burton Hutchinson, Sr.  
Northern Arapaho Business Council  
P.O. Box 396  
Fort Washakie, WY 82514

Judge Richard Ferris  
Eastern Shoshone Tribe  
P.O. Box 608  
Fort Washakie, WY 82514

Chairman Frederick Auck  
Shoshone-Bannock Tribal Chairman  
P.O. Box 306  
Fort Hall, ID 83203

Ms. Betsy Chapoose  
Ute Tribe Cultural Resources  
P.O. Box 190  
Fort Duchesne, UT 84026

Chairman Vernon Hill  
Shoshone Tribal Council  
P.O. Box 1008  
Fort Washakie, WY 82514

Mr. Willie Preacher  
Shoshone-Bannock Tribes, Cultural Resource Coordinator  
P.O. Box 306  
Fort Hall, ID 83203

Chairman Floyd Wopsock  
Northern Ute Tribe  
P.O. Box 190  
Fort Duchesne, UT 84026

Mr. Richard Burnett  
Shoshone Tribe  
P.O. Box 1008  
Fort Washakie, WY 82514

Mr. Robert Goggles  
Northern Arapaho Tribe  
P.O. Box 54 Star Route  
Arapaho, WY 82510

Mr. Clifford Duncan  
Ute Tribe Cultural Resources  
P.O. Box 1892  
Roosevelt, UT 84066

## 5.4 PREPARERS AND REVIEWERS

The list of preparers and reviewers for this EIS, including BLM Interdisciplinary Team members, cooperating State of Wyoming and OSM personnel and offices, and the third-party contractor, Maxim Technologies, is presented in **Table 5.1**.

**Table 5.1 List of Preparers and Reviewers**

Name	Position	Area of Responsibility
<b>RSFO</b>		
Joanna Nara-Kloepper	Mining Engineer	Project Lead, Solid Minerals, Coal Screening Criteria
Teri Deakins	Environmental Protection Specialist	Project Manager (NEPA), Introduction in Chapters 1, 3, and 4
Bonni Bruce	Archeologist	Cultural, Historic Transportation, Native American Concerns
Jeff Clawson	Mining Engineer	Solid Minerals
Dennis Doncaster	Hydrologist	Surface Water, Ground Water
Jim Glennon	Botanist	Special Status Plant Species, Vegetation
Susan Davis	Petroleum Engineer	Fluid Minerals
Jay D'Ewart	Range Conservationist/Wild Horse Specialist	Livestock Grazing, Wild Horses
Jo Foster	Outdoor Recreation Planner	Recreation, Visual Resources
Patricia Hamilton	Realty Specialist	Transportation, Rights-of-way
Jim Dunder	Wildlife Biologist	Wildlife, Special Status Animal Species
Chris Durham	Natural Resource Specialist	Reclamation, Sage-grouse Working Group
John Henderson	Fisheries Biologist	Colorado River Endemics
Steve Wiig	Geologist	Geology, Solid Minerals
Richard Adams	GIS Specialist	GIS Support
John MacDonald	AFM – Lands and Minerals	Soils
Angelina Pryich	Editor	Document Editing
Monica Whitby	Intern, Chicago Botanical Gardens	Wildlife
Brett Governanti	Intern, Chicago Botanical Gardens	Wildlife
Steve Boyer	Civil Engineer	IAA Calculations
Renee Dana	Resource Advisor	Land Use Planning
Russ Tanner	Archeologist	Cultural, Historic Transportation, Native American Concerns
Mike Holbert	RSFO Manager	

Name	Position	Area of Responsibility
<b>BLM Wyoming State Office</b>		
Mavis Love	Land Law Examiner	Legals
Bob Janssen	Regional Coal Coordinator	Coal Leasing
Phil Perlewitz	Supervisory Mining Engineer	Solid Minerals
Dwain McGarry	Geologist	Fluid Minerals, Reservoir Management Group
Roy Allen, PhD	Economist	Social, Economics
Susan Caplan	Physical Scientist	Air Quality, Coordinator Interagency Air Quality Team (IAQT)
Janet Kurman	Environmental Protection Specialist	NEPA
<b>BLM National Science and Technology Center</b>		
Craig Nicholls	BLM- National Air Quality Modeler	IAQT Member, Air Quality
<b>EPA</b>		
Joseph Delwiche	EPA- Air and Radiation Program	IAQT Member, Air Quality
Sara Laumann	Associate Regional Counsel, EPA Region VIII	
<b>WDEQ/AQD</b>		
Darla Potter	Air Quality Specialist	IAQT Member, Air Quality
<b>Cooperating Agencies</b>		
Floyd McMullen	OSM – NEPA Coordinator	NEPA Adequacy
Marit Sawyer	WDEQ/LQD – Senior Environmental Analysis	NEPA Adequacy
Ben Brandes	Wyoming State Planning Office	NEPA Adequacy
<b>BBCC</b>		
Dave McCarthy	Mine Engineer	Project Development, Proposed Action
Chad Johnson	Mine Engineer	Project Development, Proposed Action
<b>Maxim Technologies</b>		
David Steed	Project Manager	Project Management and NEPA Lead
Mike Egan	Assistant Project Manager	Geology, Leasing and Minerals Management
Craig Clement	Physical Resource Coordinator	Water Resources and Soils
Susan Hatch	Biological Resource Coordinator	Wildlife and Special Status Species, Wild Horses, Vegetation, Greater Sage Grouse
Valerie Waldorf	Social Resource Coordinator and GIS Specialist	Land Use, Social Economics
Dale Herring	Technical Editor	NEPA Format and Procedure
Mary Garner	GIS Specialist	GIS
Wynn John	Physical Engineer	Air Quality
Pete Guernsey	NEPA Specialist	Air Quality/NEPA Review
Cameo Flood	NEPA Specialist	NEPA Review/Quality Assurance and Control
Jana Pastor (Subcontractor)	Cultural Resource Specialist	Cultural Resources
Ronn Smith (Subcontractor)	Air Resource Specialist	Air Quality

## REFERENCES

- Ahrens, DC 1993. Essentials of Meteorology. West Publishing Company, St. Paul, MN. p. 310-12.
- Allen, R 2006. Personal communication (via email comments submitted on the Preliminary Draft Environmental Impact Statement for the Pit 14 Coal Lease-by-Application) between Allen, Economist, BLM WY State Office, and T. Deakins. January 23.
- APLIC 1994. (Avian Power Line Interaction Committee.) Mitigation of Bird Collisions with Power Lines: The State of the Art in 1994. Edison Electric Institute/Raptor Research Foundation. Washington, D.C. 78+ p.
- APLIC 1996. Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996. Edison Electric Institute/Raptor Research Foundation. Washington, D.C. 125 p.
- APLIC and USFWS 2005. (Avian Power Line Interaction Committee and U.S. Fish and Wildlife Service.) Avian Protection Plan Guidelines. Edison Electric Institute/Raptor Research Foundation, Washington, D.C., and USFWS.
- Argus 2005. (Energy Argus Coal Report International.) Petroleum Argus. October.
- BBCC 2003. (Black Butte Coal Company.) Approved Mine Permit, Revised. Wyoming.
- BBCC 2004a. Lease by Application, Serial Number WYW160394. April 15.
- BBCC 2004b. Baseline Studies - Appendix D10 Wetlands Inventory for the Salt Wells Amendment Area [unpublished report]. Point of Rocks, WY. March 4.
- BBCC 2004c. Baseline Studies - Appendix D8 Vegetation Resources for the Salt Wells Amendment Area [unpublished report]. Point of Rocks, WY. January 20.
- BBCC 2004d. Updated 2004 Raptor Protection and Mitigation Plan on the Black Butte Coal Company Mine Permit Area [unpublished report, including 2005 data]. Sweetwater County, WY. October.
- BBCC 2004e. Baseline Studies - Appendix D9 Wildlife Resources for the Salt Wells Amendment Area [unpublished report]. Point of Rocks, WY. February 6.
- BBCC 2005a. 2004 Black Butte Coal Company Permit Area Operation Plan, MP-89. March 31, 2005.
- BBCC 2005b. Permit Information, Black Butte Mine Permit No. 467-T5, 2004 Annual Report Wildlife [unpublished report]. Point of Rocks, WY. February.
- BBCC 2005c. Black Butte Mine Pit 10 Fugitive Dust Action Plan. July 9.
- Bettinger RL and MA Baumhoff 1982. The Numic Spread: Great Basin Cultures in Competition. American Antiquity 47(3).
- BLM 1979. (U.S. Dept. of Interior-Bureau of Land Management.) Final Environmental Impact Statement, Development of Coal Resources in Southwestern Wyoming. BLM, Washington, D.C. Three-vol. set. 850+ p.
- BLM 1988. National Environmental Policy Act Handbook, H-1790-1. BLM. Washington, D.C. 126+ p.
- BLM 1989. Competitive Coal Leasing.
- BLM 1996. Green River Resource Area Resource Management Plan and Final Environmental Impact Statement. BLM, Rock Springs District, Rock Springs, WY. BLM/WY/PL-96/012 + 1610. 1,009 p.

- BLM 1997. Record of Decision and Green River Resource Management Plan. BLM, Rock Springs District, Rock Springs, WY. BLM/WY/PL-97/027+1610. 216 p.
- BLM 1999. Final Environmental Impact Statement, Continental Divide/Wamsutter II Natural Gas Project. Sweetwater and Carbon Counties, Wyoming. BLM, Rock Springs District, Rock Springs, WY. BLM/WY/PL-00/005 + 1610. 27+ p.
- BLM 2001. Environmental Assessment for Bridger Coal Company Exploration Drilling for Coal in the Ten Mile Rim Area. BLM, Rock Springs District, Rock Springs, WY. 24+ p.
- BLM 2002. Environmental Assessment for PacifiCorps' Jim Bridger Power Plant Flue Gas De-Sulfurization Pond Expansion Project. BLM, Rock Springs District, Rock Springs, WY. 32 p.
- BLM 2003a. Draft Environmental Impact Statement for Desolation Flats Natural Gas Field Development Project. BLM, Rock Springs District, Rock Springs, WY. 417+ p.
- BLM 2003b. Decision Record, Finding of No Significant Impact and Environmental Assessment for the Copper Ridge Shallow Gas Exploration and Development Project. BLM. Rock Springs District, Rock Springs, WY. BLM/WY/PL-04/005+1310. 175+ p.
- BLM 2004a. Final Environmental Impact Statement for West Hay Creek Coal Lease Application (Federal Coal Lease Application WYW151634). BLM, Casper Field Office, Casper, WY, BLM/WY/PL-04/022+1320. 198+ p.
- BLM 2004b. Final Environmental Assessment for the Proposed Ten Mile Rim Coal Lease-by-Application and Associated Rights-of-Way, Sweetwater County, Wyoming. BLM, Rock Springs Field Office, WY.
- BLM 2005a. Jonah Infill Drilling Project Draft Environmental Impact Statement Air Quality Impact Analysis Supplement.
- BLM, Wyoming State Office, Cheyenne, WY; Pinedale Field Office, WY; Rock Springs Field Office, WY; and WDEQ, Air Quality Division, Cheyenne, WY. BLM/WY/PL-05/009+1310. 36+ p.
- BLM 2005b. Review of Resources and Development, Coalbed Natural Gas and Conventional Oil and Gas, Lease-by-Application Draft Environmental Impact Statement. BLM, WY State Office Reservoir Management Group, Sweetwater County, WY.
- BLM 2005c. Environmental Assessment for Bitter Creek Shallow Oil and Gas Project, Sweetwater County, Wyoming. BLM, Rock Springs Field Office, WY. WY-040-EA040-007. 135+ p.
- BLM 2005d. Draft Environmental Impact Statement for Jonah Infill Drilling Project, Sublette County, Wyoming. BLM, Pinedale and Rock Springs Field Offices, WY. BLM/WY/PL-05/009+1310. Two volumes.
- BLM 2005e. Socioeconomic Analysis Technical Support Document, Jonah Infill Drilling and South Piney Projects Environmental Impact Statements. Prepared by TRC Mariah Associates, Inc. (Laramie, WY) for USDOJ-BLM WY State Office (Cheyenne, WY) and Pinedale Field Office (Pinedale, WY); Jonah Infill Drilling Project Operators; and South Piney Natural Gas Development Project Companies. 232+ p.
- BLM 2006. Final Environmental Impact Statement, Jonah Infill Drilling Project, Sublette County, Wyoming. USDOJ-BLM, Pinedale and Rock Springs Field Office, WY. January.
- Busby, MW 1966. HA-212. Annual Run-off in the Conterminous United States, 1 sheet. Scale 1:7,500,000.

- California Native Plant Society 2005. Rare Plant Protection. Available at:  
[http://www.cnps.org/programs/Rare\\_Plant/blm.htm](http://www.cnps.org/programs/Rare_Plant/blm.htm). Accessed October 2005.
- CEQ 1997. (Council on Environmental Quality.) Environmental Justice Guidance under the National Environmental Policy Act. Executive Office of the President dated Dec. 10. Washington, D.C.
- Chaiken, RF, EB Cook and TC Ruhe 1974. Toxic Fumes from Explosive: Ammonium Nitrate-Fuel Oil Mixtures. Pittsburgh Mining and Safety Research Center, Pittsburgh, PA. USDOJ-Bureau of Mines, Report of Investigations 7867.
- Christopherson, RW 1992. Geosystems: An Introduction to Physical Geography. Macmillan Publishing Company, NY. p. 255-89.
- Clawson, J 2005a. Personal communication between J Clawson, BLM Minerals Specialist, Rock Springs Field Office, WY, and M Egan, Maxim Technologies, Salt Lake City, UT. June.
- Clawson, J 2005b. Personal communication between J Clawson, BLM Minerals Specialist, Rock Springs Field Office, WY, and M Egan, Maxim Technologies, Salt Lake City, UT. March 22.
- Cole, H and J Summerhays 1979. A Review of Techniques Available for Estimating Short-term NO<sub>2</sub> Concentrations. Journal of the Air Pollution Control Association 29(8).
- Connelly, JW, ST Knick, MA Schroeder, and SJ Stiver 2004. Conservation Assessment of Greater Sage-Grouse and Sagebrush Habitats. Western Association of Fish and Wildlife Agencies. June.
- D'Ewart, J 2005. Personal communication (telephone) between J D'Ewart, BLM Wildlife Biologist, Rock Springs Field Office, WY, and S Hatch, Maxim Technologies, Salt Lake City, UT, regarding current status of wild horses and burros within the SWCHMA. September 1.
- Darlington, DG, SD Murray, and J Stainbrook 2004. Data Recovery Investigations at Five Sites in the Bridger Coal Mine Permit Area, Sweetwater County, Wyoming. Prepared by Western Archaeological Services, Rock Springs, WY, for Bridger Coal Company. Submitted to USDOJ-BLM, Rock Springs Field Office, WY.
- Desert USA 2005. Prairie Dog Species Accounts. Available at:  
[http://www.desertusa.com/dec96/du\\_pdogs.html](http://www.desertusa.com/dec96/du_pdogs.html). Accessed August 2005.
- Dunder, J 2005a. Personal communication (email) between J Dunder, BLM Wildlife Biologist, Rock Springs Field Office, WY, and S Hatch, Maxim Technologies, Salt Lake City, UT. July 14.
- Dunder, J 2005b. Personal communication (comments) between J. Dunder, BLM Wildlife Biologist, Rock Springs Field Office, WY, and S. Hatch, Maxim Technologies, Salt Lake City, UT. September 27.
- Dunder, J 2005c. Dunder, BLM Wildlife Biologist, Rock Springs Field Office, WY, quoted in an unpublished letter from T Christiansen, Wyoming Game and Fish Dept., Sage-Grouse Program Coordinator, to B Moynahan, Maxim Technologies, Helena, MT. August 3.
- Dunder, J 2005d. Personal communication (meeting) between J Dunder, BLM Wildlife Biologist, Rock Springs Field Office, WY, with S Hatch, Maxim Technologies, Salt Lake City, UT, regarding swift fox and pygmy rabbit. August 30.
- EPA 1997. (U.S. Environmental Protection Agency.) Technical Highlights: Emission Factors for Locomotives. Office of Mobile Sources. EPA Document 420-F-97-051. December.
- EPA 1998. Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analysis. Washington, D.C.

- EPA 2003. 1999 National Emissions Inventory. Available at: <http://www.epa.gov/air/data/reports.html>. Accessed November 2005.
- EPA 2005. Clean Air Status and Trends Network. Available at: <http://www.epa.gov/castnet/sites/pnd165.html>. Accessed October 2005.
- Federal Financial Institutions Examination Council. 2000. Census Tract Information (based on 2000 Census).
- Federal Register 1994. Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. Executive Order 12898. February 3.
- Federal Register 1999. HHS Poverty Guidelines. Dept. of Health and Human Services. p. 13428-30. March 18.
- Federal Register 2002. Twelve-month Finding for a Petition to List the Wasatch Front Columbia Spotted Frog as Threatened Throughout its Range. Available at: <http://www.r6.fws.gov/species/amphibians/spottedfrog/fedreg08302002.htm>. Accessed August 2005.
- Fletcher, PK, DE Fletcher, and L Whitley 1999. Cherokee Trail Diaries. Caxton Printers, Ltd., Caldwell, ID.
- Foster, J 2005. Personal communication between J Foster, BLM Recreation Planner, and V Waldorf, Maxim Technologies, Salt Lake City, UT. August 2.
- Government Land Office 1884. 1884 Map of T17N, R100W, and T17N, R101W, WY.
- Government Land Office 1884. 1884 Map of T18N, R101W, WY.
- Government Land Office 1908. 1908 Resurvey map of T17N, R101W, WY and Resurvey map of T18N, R101W, WY.
- Harrell, L 1987. The Buffalo Hump Site: Late Prehistoric Dwellings in the Great Divide Basin, Wyoming. BLM, Cultural Resources Series No. 7, Cheyenne, WY.
- Harvey et al. 1999. Harvey, MJ, JS Altenbach, and TL Best 1999. Bats of the United States. Arkansas Game & Fish Commission in cooperation with USFWS Asheville Field Office.
- Heidel, B 2003. Status of Nelson's Milkvetch (*Astragalus nelsonianus* Barneby) in Wyoming Natural Diversity Database. University of WY. March.
- IML 2000-2004. (Inter-Mountain Laboratories.) Black Butte Coal Ambient Air Monitoring Network Quarterly Reports. Prepared by IML Air Science, Sheridan, WY, for Black Butte Coal Company. Submitted to WDEQ/AQD.
- Jacquet, J. 2005. Arrests, Incidents, and Index Crimes in Sublette County: 1995 to 2004. Available at: <https://www.pinedaleonline.com/socioeconomic/pdfs/SubletteCoCrimeReport2005.pdf>. Accessed January 24, 2006
- Johnson, DE 2001. Historical Assessment of the Black Buttes Road. Prepared by Western Archaeological Services, Rock Springs, WY, for Rocky Mountain Energy.
- Kaufman, K 1996. Lives of North American Birds. Houghton Mifflin Company, New York, NY.
- Kelly, BT 2003. Letter to Black Butte Coal Company dated December 1.

- Larson, ML and JE Francis (eds.) 1997. Settlement and Subsistence of the Archaic Period in the Green River Basin, Wyoming. In: Changing Perspectives on the Archaic of the Northwestern Plains. University of South Dakota Press, Vermillion, SD.
- Massey, R 1989. Wyoming Comprehensive Historic Preservation Plan. Prepared by Wyoming State Historic Preservation Office (Cheyenne, WY) for Archive, Museums, and Historic Dept.
- McCarthy, D 2005. Personal communication between D McCarthy, Black Butte Coal Company, LBA Project Manager, WY, and M Egan, Maxim Technologies, Salt Lake City, UT. August 31.
- McKibbin et al. 1989. McKibbin, A, RJ Rood, and MD Metcalf. 1989. Archaeological Investigations at Six Sites in the Leucite Hills, Sweetwater County, Wyoming. Submitted by Metcalf Archaeological Services (Eagle, CO) to the USDOI-BLM, Rock Springs District, WY.
- McNees et al. 1992. McNees, L, T Reust, R Weathermon, C Smith, R Anduze, B McClelland, K Kibler, F Oglesby, and C Webb 1992. Data Recovery Investigations at the Black Butte and Leucite Hills Mine Permit Areas, Sweetwater County, Wyoming. Prepared by Mariah Associates, Inc. for Black Butte Coal Company.
- Metcalf, MD and P Treat 1979. Continuity in Late Prehistoric Period Pronghorn Procurement in Southwestern Wyoming. Paper presented at the 44th Annual Meeting of the Society for American Archaeology, Vancouver, B.C.
- Metcalf, MD (ed.) 1977. Archaeological Sampling Survey of the Sweetwater-Kemmerer and Hanna-Atlantic Rim Coal Environmental Impact Statement Areas. Western Wyoming College Occasional Papers No. 10, Rock Springs, WY.
- Metcalf, MD 1987. Contributions to the Prehistoric Chronology of the Wyoming Basin. In: Perspectives on Archaeological Resources Management in the Great Plains. AJ Osborn and RC Hassler, eds. I & O Publishing Company, Omaha, NE. p. 233-61.
- Metcalf, MD and D Kathka 1976. National Register of Historic Places Nomination Form for Gilbralter, 48SW1822.
- Metcalf, MD, C Love, M McCoy, N McCullough, and S Metcalf 1975. Archaeological Investigations at the Proposed Black Butte Mine, Sweetwater County, Wyoming. Prepared for Black Butte Coal Company. Western Wyoming College Occasional Papers No. 2. Rock Springs, WY.
- Ministry of Environment 2005. Biodiversity Branch, B.C. Frogwatch Program, Great Basin Spadefoot. Available at: <http://wlapwww.gov.bc.ca/wld/frogwatch/whoswho/factshts/spadefoot.htm>. Accessed August 2005.
- Munn, LC and Arneson, CS 1999. Draft 1:100,000-Scale Digital Soils Map of Sweetwater County: University of WY Agricultural Experiment Station.
- Murcay, D 1993. An Assessment of the Newly Discovered Upper Powder Spring Sites: A Hunting Complex in Southwest Wyoming. The Wyoming Anthropologist 37(1-2).
- NADP 2005. (National Atmospheric Deposition Program.) Annual Data Summary for Site WY06 (Pinedale). Available at: <http://nadp.sws.uiuc.edu>. Accessed October 2005.
- Newberry J and C Harrison. 1986. The Sweetwater Creek Site. Cultural Resource Management Report No. 19. Archaeological Services of Western Wyoming College, Rock Springs, WY.
- Nyenhuis, J 2003. D7 Soil Resources, Salt Wells Amendment Area, Black Butte Coal Company.

- Ogle, KM and B Wood 2004. Cumulative Hydrological Impact Assessment of Coal Mining in the Upper Bitter Creek, Southwestern Wyoming. WDEQ, Land Quality Division, WDEQ-CHIA-10. Two plates, 55 p.
- Pace, TG 2005. Examination of the Multiplier Used to Estimate PM<sub>2.5</sub> Fugitive Dust Emissions from PM<sub>10</sub>. In: 14th Annual Emissions Inventory Conference: Transforming Emissions Inventories Meeting Future Challenges Today. Las Vegas, NV; April 12-14. Available at: <http://www.epa.gov/ttn/chief/conference/ei14/session5/pace.pdf>. Accessed January 2006.
- Pacific Biodiversity Institute 2005. Endangered Species Information Network. Available at: <http://www.pacificbio.org/ESIN/Mammals/PygmyRabbit/pygmyrabbit.html>. Accessed August 2005.
- Radosevich, D 2005. Personal communication between D Radosevich, Specialist, Sweetwater Economic Development Association, Sweetwater, WY, and V Waldorf, Maxim Technologies, Salt Lake City, UT. June 9.
- Roehler, HW 1979. Geologic and Energy Resources of the Sand Butte Rim NW Quadrangle, Sweetwater County, Wyoming. USGS, Professional Paper 1065-A, 54 p.
- Rowland, MM, MJ Wisdom, BK Johnson, and JG Kie. 2000. Elk Distribution and Modeling in Relation to Roads. *J. of Wildlife Management* 64:672-84.
- Seinfeld, JH 1986. Atmospheric Chemistry and Physics of Air Pollution. Wiley InterScience, NY.
- Smithsonian 2005. National Museum of Natural History, North American Mammals, Wyoming Pocket Gopher. Available at: [http://www.mnh2.si.edu/education/mna/image\\_info.cfm?species\\_id=404](http://www.mnh2.si.edu/education/mna/image_info.cfm?species_id=404). Accessed August 2005.
- Sonoran Institute 2006. Socioeconomics Program. Profiles for Sweetwater County and Cities. Available at: [http://www.sonoran.org/programs/socioeconomics/si\\_se\\_program\\_tools.html](http://www.sonoran.org/programs/socioeconomics/si_se_program_tools.html). Accessed January 23, 2006.
- Stainbrook et al. 2002. Stainbrook, J, S Goodrick, and J Yerkovich 2002. Class III Inventory and Testing for the Black Butte Coal Company Salt Wells Mine Expansion Project. Prepared by Western Archaeological Services, Rock Springs, WY, for Black Butte Coal Company. Submitted to USDO-ILM, Rock Springs Field Office, WY.
- Stern, AC, HC Wohlers, RW Boubel, and WP Lowry. 1973. Fundamentals of Air Pollution. Academic Press, NY.
- Sutton 2005. 2000-2005 WARMS Pinedale data set. Personal communication (email) from K Sutton, Air Resource Specialists, Inc., Fort Collins, CO, to W John, Maxim Technologies, Salt Lake City, UT, October 26.
- SWEDA 2003. (Sweetwater Economic Development Association.) Major Employers and Production. Available at: <http://www.sweda.net/Major%20Employers.htm>.
- SWEDA 2005. About Sweetwater County, Wyoming. Available at: [http://www.sweda.net/about\\_sweetwater\\_county.htm](http://www.sweda.net/about_sweetwater_county.htm).
- Sweetwater County 2002. The Sweetwater County Comprehensive Plan, County Goals, Objectives, and Implementation Strategies. Sweetwater County Board of Commissioners and Sweetwater County Planning Commission, Sweetwater County, WY. August 6. 23+ p.
- TRC Environmental Corporation 2006. Final Air Quality Technical Support Document for the Jonah Infill Drilling Project

- Environmental Assessment. Prepared for USDOI-BLM, Wyoming State Office, Pinedale Field Office, and Jonah Infill Drilling Project Operators. January.
- Thompson, KW and JV Pastor 1995. People of the Sage: 10,000 Years of Occupation in Southwest Wyoming. Cultural Resource Management Report No. 67. Archaeological Services of Western Wyoming College, Rock Springs, WY.
- U.S. Census Bureau 2000a. Wyoming Quickfacts: Sweetwater County. Available at: <http://www.quickfacts.census.gov/qfd/states/56/56037.html>. Accessed October 2005.
- U.S. Census Bureau 2000b. Table DP-1. Profile of General Demographic Characteristics: 2000. Rock Springs and Green River, WY.
- U.S. Census Bureau 2005. Sweetwater County Population. Available at: <http://quickfacts.census.gov/qfd/states/56000.html>. Accessed October 2005.
- UDWR 2005a. (Utah Division of Wildlife Resources.) Dwarf Shrew Species Account. Available at: <http://dwrcdc.nr.utah.gov/rsgis2/Search/Display.asp?FINm=sorenanu>. Accessed August 2005.
- UDWR 2005b. Northern Leopard Frog Species Account. Available at: <http://dwrcdc.nr.utah.gov/rsgis2/Search/Display.asp?FINm=ranapipi>. Accessed August 2005.
- USFS 1989. (USDA-Forest Service.) A Screening Procedure to Evaluate Air Pollution Effects on Class 1 Wilderness Areas. Gen. Tech. Rep. RM-168. USFS, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO. 36 p.
- USFS 2003. Lake Water Chemistry Data [unpublished] provided by T Svalberg, USFS, to S Caplan, USDOI-BLM, Wyoming State Office.
- USFWS 2002. (U.S. Fish and Wildlife Service.) Personal communication (letter) from MM Long, USFWS, to M Sawyer, WDEQ, Land Quality Division
- Visibility Information Exchange Web System 2005. Bridger Wilderness (BRID1), Mount Zirkel Wilderness (MOZI1), Brooklyn Lake (BRLA1), Rocky Mountain NP HQ (RMHQ1). Annual Summary Trends. Available at: <http://vista.circa.colostate.edu/views/Web/AnnualSummary/Trends.aspx>. Accessed October 2005.
- WDE 2004. (Wyoming Dept. of Employment.) Table 1: Growing Industries with 100 or More Employment for 2004 4Q1 in NAICS. Available at: [http://www.doe.state.wy.us/LMI/G\\_Dind/growing\\_2004\\_q1.htm](http://www.doe.state.wy.us/LMI/G_Dind/growing_2004_q1.htm). Accessed October 2005.
- WDEQ 2004a. (Wyoming Dept. of Environmental Quality.) PM10 Data. Available at: <http://deq.state.wy.us/aqd/downloads/AirMonitor/WYPM10-2003.pdf>. Accessed October 2005.
- WDEQ 2004b. Wyoming's 2004 305(b) State Water Quality Assessment Report and 2004 303(d) List of Waters Requiring TMDLs.
- WDEQ/LQD 2002. (Wyoming Dept. of Environmental Quality/Land Quality Division. Coal Rules and Regulations. Cheyenne, WY. 210+ p.
- WDEQ/WQD 2005. (Wyoming Dept. of Environmental Quality/Water Quality Division.) Water Quality Rules and Regulations. Chapter 8: Quality Standards for Wyoming Groundwaters.
- Western Regional Climate Center 2005. Rock Springs FAA AP, Wyoming Climate Summary, Monthly Total Precipitation. Available at: <http://www.wrcc.dri.edu>. Accessed November 2005.

- WGFD 2003. (Wyoming Game and Fish Dept.) Annual Report of Big and Trophy Game Harvest. Available at: <http://gf.state.wy.us/downloads/pdf/04biggameharvest.pdf>. Accessed July 25, 2005.
- WGFD 2004. Green River Regional Annual Big Game Herd Unit Reports 2003 [unpublished report]. July.
- Wiig S 2005. Personal communication between S Wiig, BLM Minerals Resource Specialist, Rock Springs Field Office, WY, and M Egan, Maxim Technologies, Salt Lake City, UT. July 11.
- WMA 2004. (Wyoming Mining Association.) A Concise Guide to Wyoming Coal 2004. Wyoming Coal Information Committee. Available at: <http://www.wma-minelife.com>. Accessed November 2005.
- WNDD 2005. Wyoming Natural Diversity Database. Personal communication (unpublished letter and appendices) from M Arnett, WNDD Database Specialist, to J Dunder, BLM Wildlife Biologist, Rock Springs Field Office, WY. July 12.
- Wyoming Attorney General 1999. Uniform Crime Reporting Division of Criminal Investigation Crime in Wyoming: 1999 Annual Report. Available at: <http://attorneygeneral.state.wy.us/dci/index.html>. Accessed October 22, 2005.
- Wyoming Attorney General 2004. Uniform Crime Reporting Division of Criminal Investigation Crime in Wyoming. 2004 Annual Report. Available at: <http://attorneygeneral.state.wy.us/dci/index.html>. Accessed October 22 2005.
- Wyoming Dept. of Administration and Information 2004. Economic Analysis Division Equality State Almanac, 2002. Wyoming Dept. of Administration and Information. Cheyenne, WY.
- Wyoming Dept. of Administration and Information. 2005. Wyoming Population and Estimates and Forecast for Wyoming, Counties, Cities and Towns for 2000–2020. Available at: <http://eadiv.state.wy.us/pop/pop.asp>. Accessed January 24, 2006.
- Wyoming Dept. of Employment 2004. Table 1: Growing Industries with 100 or More Employment for 2004 4Q1 in NAICS. Available at: [http://www.doe.state.wy.us/LMI/G\\_Dind/growing\\_2004\\_ql\\_hm](http://www.doe.state.wy.us/LMI/G_Dind/growing_2004_ql_hm). Accessed November 2005.
- Wyoming Dept. of Employment 2005. Sweetwater County Profile. Available at: <http://www.doe.state.wy.us/ANSWERS/>. Accessed November 2005.
- Wyoming Dept. of Revenue. 2005. Annual Report: July 1, 2004 through June 30, 2005. Available at: <http://revenue.state.wy.us/>. Accessed January 13, 2006.
- Wyoming Division of Economic Analysis 2005. Wyoming Cost of Living for the Fourth Quarter 2004. J Ballard, Senior Economist, State of WY. March 31.
- Wyoming Division of State Parks and Historic Sites 2003. The 2003-2008 Wyoming Statewide Comprehensive Outdoor Recreation Plan.
- Wyoming Housing Database Partnership 2005a. Section II - Sweetwater County Profile. In: A Profile of Wyoming Demographics, Economics and Housing. Semiannual report ending December 31, 2004.
- Wyoming Housing Database Partnership 2005b. A Profile of Wyoming Demographics, Economics, and Housing Semiannual Report, Ending June 30, 2005, Volume I of II, August 2005. Prepared by Western Economic Services, LLC. Portland, Oregon. , p. 143,

Wyoming Oil and Gas Conservation Commission 2004. Conservation Commission Annual Gas Production in BCF, 1920 to 2004.

Wyoming Rare Plant Technical Committee 1994. Wyoming Rare Plant Field Guide.

Wyoming State Inspector of Mines 2004. Annual Report, 2004.

Wyoming Weed and Pest Council 2005. Declared List of Weeds and Pests: Wyoming Weed and Pest Control Act of 1973 W.S. 11-5-102(a)(vii) and W.S. 11-5-102(a)(viii). Available at: <http://www.wyoweed.org/>. Accessed November 2005.

## GLOSSARY

Definitions from (BLM 2004a) and (BLM 1997) unless otherwise noted.

**Animal Unit Month (AUM):** The amount of forage to sustain one mature cow or the equivalent, based on an average daily forage consumption of 26 pounds of dry matter per day. The equivalent animal units for other ungulate species, based on a weight conversion (3 percent body weight per day), are: 10.5 for antelope; 7.6, deer; 2.1, elk; 1.2, moose; 0.9, wild horses; and 5.2, sheep.

**Application:** A formal request for rights to use, or obtain eventual title to, public lands or resources.

**Appropriate Management Level (AML):** The optimum number of wild horses that provides a thriving natural ecological balance on the public range.

**Archaeological and Historical Site:** A site that contains either objects of antiquity or cultural values relating to history and/or prehistory that warrant special protection.

**Beneficial Impact:** An apparent direct or indirect advantageous effect (BLM 2003).

**Big Game Habitat:** Habitat areas used by big game animals at some time during their yearly life cycle.

**Camping:** Includes auto and trailer camping, along with other camping at developed sites, and backcountry camping.

**Cooperating Agency:** Assists the lead Federal agency in developing an EA or EIS. The Council on Environmental Quality regulations implementing NEPA define a cooperating agency as any agency that has jurisdiction by law or special expertise for proposals covered by NEPA (40 CFR 1501.6). Any tribe or Federal, State, or local government jurisdiction with such qualifications may become a cooperating agency by agreement with the lead agency.

**Cultural Resource Inventory:** A three-tiered process for discovering, recording, and evaluating cultural resources.

**Class I Inventory:** A review of existing literature and oral informant data together with an analysis of a specific geographic region (e.g., an area of potential effect, drainage basin, resource area, etc.).

**Class II Inventory:** A sampling survey usually aimed at developing and testing a predictive model of cultural resource-distribution.

**Class III Inventory:** An on-the-ground survey to discover, record, and evaluate cultural resources within a specific geographic area (e.g., usually an area of potential effect for a proposed undertakings).

**Cultural Resources:** Remains of human activity, occupation, or endeavor, reflected in districts, sites, structures, buildings, objects, artifacts, ruins, works of art, architecture, and natural features that were of importance in past human events. These resources consist of (1) physical remains, (2) areas where significant human events occurred, even though evidence of the event no longer remains, and (3) the environment immediately surrounding the actual resource.

**Endangered Species:** Any animal or plant species in danger of extinction throughout all or a significant portion of its range. Also, see Threatened Species.

**Environmental Impact Statement (EIS):** A written analysis of the impacts on the natural, social, and economic environment of a proposed project or resource management plan. **Federal Land:** All classes of land owned by the Federal Government.

**Grazing Lease:** An authorization that permits the grazing of livestock on public lands outside the grazing districts during a specified period of time (Section 15 of the Taylor Grazing Act).

Herd Management Area: The area of wild horse or burro habitat covered by a herd management area plan.

Hunting: Includes big- and small-game hunting, waterfowl hunting, and trapping.

Land Use Plan: A set of decisions that establish management direction for land within an administrative area, as prescribed under the planning provisions of FLPMA; an assimilation of land-use-plan-level decisions developed through the planning process outlined in 43 CFR 1600, regardless of the scale at which the decisions were developed.

Leasable Minerals: Minerals subject to lease by the Federal Government; include oil and gas, coal, phosphate, sodium, potash, and oil shale, as well as geothermal resources.

License: An authority granted by the United States to do a particular act or series of acts upon public lands without the licensee possessing any estate or interest in the land itself.

Life of Mine: Time period it takes to exhaust the recoverable coal reserves within a mine or permit area.

Lithic Scatter Site: A class of cultural resource that consists of an array of chipped stone artifacts without other kinds of artifacts or features.

Mineable Coal: Coal that can be economically mined using present day mining technology (BLM 2003).

Mineral Rights: The rights of one who owns the mineral estate (subsurface) (BLM 2003).

Mineral: Organic and inorganic substances occurring naturally, with characteristics and economic uses that bring them within the purview of mineral laws; a substance that may be obtained under applicable laws from public lands by purchase, lease, or preemptive entry.

Mining Permit: A permit to conduct surface coal mining and reclamation operations issued by the state regulatory authority pursuant to a state program or by the Secretary pursuant to a federal program (see 30 CFR 701.5) (BLM 2003).

Mitigation: Avoiding the impact altogether by not taking a certain action or parts of an action; minimizing impacts by limiting the degree of magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and/or compensating for the impact by replacing or providing substitute resources or environments.

Multiple Use: A combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, and wildlife and fish, along with natural scenic, scientific, and historical values.

National Environmental Policy Act (NEPA) of 1969: The federal law established in 1969, which went into effect on January 1, 1970, that 1) established a national policy for the environment, 2) requires federal agencies to become aware of the environmental ramifications of their proposed actions, 3) requires full disclosure to the public of proposed federal actions and a mechanism for public input into the federal decision-making process, and 4) requires federal agencies to prepare an environmental impact statement for every major action that would significantly affect the quality of the human environment.

Native (Indigenous) Species: Plants or animals that originated in the area in which they are found (i.e., they naturally occur in that area); with respect to a particular ecosystem, a species that, other than as a result of an introduction, historically occurred or currently occurs in that ecosystem.

NEPA Process: All measures necessary for compliance with the National Environmental Policy Act of 1969 (see 40 CFR 1508.21) (BLM 2003).

**No Action Alternative:** An alternative where the proposed activity would not occur.

**Overburden:** Material of any nature, consolidated or unconsolidated, that overlies a coal or other useful mineral deposit, excluding topsoil (BLM 2003).

**Permit:** A revocable authorization to use public land for a specified purpose for up to three years.

**Permittee:** An entity authorized to grazing on BLM lands in accordance with Section 3 of the Taylor Grazing Act.

**Permitted Use:** the forage allocated by, or under the guidance of, an applicable land use plan for livestock grazing in an allotment under a permit or lease; expressed in Animal Unit Months (BLM 2004c).

**Public Lands:** Any land and interest in land owned by the United States that are administered by the Secretary of the Interior through the Bureau of Land Management, without regard to how the United States acquired ownership, except for (1) lands located on the Outer Continental Shelf, and (2) lands held for the benefit of Indians, Aleuts, and Eskimos. Includes public domain and acquired lands. (See definitions.)

**Reclamation:** The reconstruction of disturbed ecosystems by returning the land to a condition approximate or equal to that which existed prior to disturbance, or to a stable and productive condition compatible with the land use plan. The immediate goal of reclamation is to stabilize disturbed areas and protect both disturbed and adjacent undisturbed areas from unnecessary degradation.

**Recoverable Coal:** The amount of coal that can actually be recovered for sale from the demonstrated coal reserve base (BLM 2003).

**Right of Way:** A permit or an easement that authorizes the use of lands for certain specified purposes, such as the construction of access roads or a gas pipeline.

**Riparian Habitat:** A highly valued wetland vegetation community found along or around streams, lakes, ponds, and other open water (both perennial and intermittent). This unique habitat is crucial to the continued existence of many fish and wildlife species known to occur in the area. Riparian vegetation helps maintain high water tables, stabilize pond and streambanks, create quality fish and wildlife habitat, prevent or reduce flooding, and maintain or improve water quality.

**Riparian:** An area of land directly influenced by permanent water. It has visible vegetation or physical characteristics reflective of permanent water influence. Lakeshores and streambanks are typical riparian areas. Excluded are such sites as ephemeral streams or washes that do not have vegetation dependent on free water in the soil.

**Soil Survey:** The systematic examination, description, classification, and mapping of soils in an area, usually a county. Soil surveys are classified according to the level of detail of field examination. Order I is the most detailed and Order V is the least detailed (BLM 2003).

**State Office:** The first-level administrative unit of the Bureau of Land Management field organization. It comprises a geographic area consisting of one or more States.

**Strutting Ground (sometimes referred to as a lek):** A traditional breeding area for grouse species where territorial males display and establish dominance (BLM 2003).

**Threatened Species:** Any animal or plant species likely to become endangered within the foreseeable future throughout all or a part of its range.

**Total Dissolved Solids (TDS):** The total quantity in milligrams per liter of dissolved materials in water (BLM 2003).

Unsuitability Criteria: The 20 criteria described in 43 CFR 3461, the application of which results in an assessment of federal coal lands as suitable or unsuitable for surface coal mining (BLM 2003).

Visual Resource Management (VRM): The systematic means to identify visual values, establish objectives which provide the standards for managing those values, and evaluate the visual impacts of proposed projects to ensure that objectives are met.

Wetland: Lands where at least periodic inundation or saturation with water (either from the surface or subsurface) is the dominant factor determining the nature of soil development and the types of plant and animal communities living there. These include the entire zones associated with streams, lakes, ponds, springs, canals, seeps, wet meadows, and some aspen stands. Wetlands support all fish. They also support more species of wildlife (in higher densities) than any other habitat type in the planning area. They comprise less than one percent of the public land acreage.

Wild Horses: All unbranded and unclaimed horses using public lands as all or part of their habitat.

Wilderness: An area of undeveloped Federal land retaining its primeval character and influence, without permanent improvement or human habitation, that is protected and managed so as to preserve its natural conditions and that (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.