

Appendix



APPENDIX 1.1: AGENCY'S RESPONSIBILITIES IN THE BILLINGS RESOURCE AREA

The following agencies share regulatory or reviewing responsibility in the Billings Resource Area.

The Advisory Council on Historic Preservation (ACHP), National Park Service (NPS), Montana State Historic Preservation Officer (SHPO) and Montana State Archeologist

Section 106 of the National Historic Preservation Act and Section 2b of Executive Order 11593 require that BLM consult with the ACHP, SHPO and the State Archeologist on actions that might affect historic or cultural values on public lands.

Bureau of Indian Affairs (BIA)

The Crow Indian Reservation is located in the southeastern portion of the resource area and is administered by the BIA (U.S. Department of the Interior).

Soil Conservation Service (SCS)

SCS (U.S. Department of Agriculture) is primarily concerned with the stabilization of soil and watershed resources, and increasing the productivity of private land. To improve production SCS has developed farm and ranch plan programs with soil conservation projects that include detention reservoirs, seeding and grazing systems that are designed to use the private range effectively. In an integrated program, other rangelands such as public land must be considered.

Through the Agricultural Stabilization and Conservation Service (ASCS), the Soil Conservation Service provides assistance to landowners who want to improve their private rangelands. The ASCS provides cost-sharing on fences, water developments and erosion control; the SCS provides technical support in planning, surveying, designing and laying out each project.

Corps of Engineers

This agency (U.S. Army) has permitting responsibility under Section 404 of the Navigable Water Act.

Minerals Management Service (MMS)

MMS (U.S. Department of the Interior) has jurisdiction over operational development of oil and gas deposits on public lands after BLM issues the lease.

Cooperative State Grazing Districts

Organized under the 1933 Montana Grass Conservation Act, these nonprofit cooperative associations of livestock operators are empowered to lease or buy grazing lands, to develop and manage district controlled lands and to allocate grazing preferences among members and nonmembers.

MUSSELSHELL COUNTY
Pole Creek
Kilby Butte

Environmental Protection Agency (EPA)

EPA is authorized under Section 309 of the Clean Air Act to review and evaluate environmental impact statements. Under Section 208, the Federal Water Pollution Control Act, this agency also monitors water pollution control planning through the Montana Department of Health and Environmental Sciences with which BLM coordinates land use planning.

Fish and Wildlife Service (FWS)

The Fish and Wildlife Service (U.S. Department of the Interior) manages Lake Mason National Wildlife Refuge, Halfbreed Lake National Wildlife Refuge and Hallstone National Wildlife Refuge. Fish and Wildlife also enforces the Endangered Species Act, manages migratory waterfowl and monitors the aerial hunting of predators.

Montana Department of Fish, Wildlife and Parks

Montana Department of Fish, Wildlife and Parks is responsible for management of fisheries, big and small game species and outdoor recreation. BLM has an agreement with Montana Department of Fish, Wildlife and Parks to maintain, manage and improve wildlife resources in Montana.

Old West Regional Commission

This State-Federal partnership established by the Public Works and Economic Development Act stimulates programs for the orderly growth and development of several states, including Montana. Under the Old West Regional Commission, the Montana Public Lands Council through the "Grazing Assistance and Evaluation Program" facilitates the exchange of information between public land users and BLM and evaluates allotment management plans.

National Park Service (NPS)

This agency (U.S. Department of the Interior) manages the Bighorn Canyon National Recreation Area with administrative headquarters located at Fort Smith, Montana.

Private Grazing Association

This association, grazing public lands in common, helps ease the management of allotments where there would otherwise be numerous permittees.

MUSSELSHELL COUNTY
Lake Mason Grazing Association

Montana Department of State Lands (MDSL)

State land, which often is intermingled with BLM land, is generally leased to individual livestock operators or cooperative state grazing districts on a long-term basis. Coordination with the Montana Department of State Lands is continuing as the department becomes increasingly involved in management planning and the development of range improvements.

Bureau of Reclamation (BOR)

The Bureau of Reclamation (U.S. Department of the Interior) manages Yellowtail Reservoir in Big Horn County, Montana.

U.S. Forest Service (USFS)

The USFS (U.S. Department of Agriculture) has jurisdiction over areas within the Custer, Gallatin and Lewis and Clark National Forests in Carbon, Stillwater, Golden Valley, Wheatland and Sweet Grass Counties, Montana.

APPENDIX 1.2: THE PLANNING PROCESS

The planning process described in BLM planning regulations 43 CFR part 1600, consists of nine action steps: (1) Inventory and Data Collection; (2) identification of issues; (3) Development of Planning Criteria; (4) Management Situation Analysis; (5) Alternative Formulation; (6) Assessment of Alternatives; (7) Selection of Preferred Alternative; (8) Selection of Resource Management Plan; and (9) Monitoring and Evaluation.

The first seven action steps have been completed and are summarized below.

Step 1. Identification of Issues

The general public, other Federal agencies, and state and local governments were asked to identify public land management issues in the resource area. Public meetings were held in Lovell, Wyoming and Billings and Lewistown, Montana during May, 1982 to discuss the wilderness issue. During the same month, meetings were also held in Bridger and Roundup, Montana to discuss the coal leasing issue. In addition, BLM identified management concerns that were not identified by these groups. This step determined the scope of the plan by determining the significant issues to be addressed.

Step 2. Inventory

Resource specialists reviewed base data from existing and updated inventories. Chapter 3 of this draft environmental impact statement describes the various resources that were inventoried. Existing plans were also reviewed to utilize recommendations, decisions and directives that would apply to all resource activities.

Step 3. Development of Planning Criteria

Planning criteria were developed to identify the considerations and constraints that would be applied to the analysis throughout the planning process. For example, the criteria, in conjunction with field inventory work, determined which public lands are suitable for disposal. This phase also included the formulation of the Lewistown District Manager's concepts about how to deal with the issues.

Step 4. Management Situation Analysis

This step describes the capability of the resources to respond to the identified issues and concerns. It describes the resources that would be affected, explains how the resources are currently being managed, and lists possible options for managing the resources. The Management Situation Analysis was used in developing the Affected Environment Chapter (Chap. 3). This document is on file at the BLM Billings Resource Area Office, 810 East Main Street, Billings, and is available for public information.

Step 5. Alternative Formulation

Management options analyzed in Step 4 were used to formulate the alternatives in this step. Management "themes" were developed to portray how the various issues would respond to changing program priorities and funding levels. Three alternatives evolved--the existing management level alternative describes present program direction and resource development trends; the low level alternative depicts a land-use plan which emphasizes fewer restrictions to resource development, and where funding is reduced; the high level alternative describes the opposite situation; environmental protection and enhancement would be stressed, and non-renewable resource development would be restricted. Where possible, coal unsuitability criteria were applied.

Step 6. Assessment of Alternatives

Specific actions proposed under each issue and alternative level were developed. In an interdisciplinary process, resource specialists then described the environmental consequences of each plan-wide alternative level to the various resources, including biological, physical, economic and social effects.

This step is the environmental analysis required by the National Environmental Policy Act and is presented in Chapter IV.

Step 7. Selection of Preferred Alternative

The Preferred Alternative presented in Chapter 2 was formulated based on (1) issues identified through the process; (2) decision criteria developed and considered by management; and (3) analysis of the impacts associated with the specific recommendations in each of the three previously formulated alternatives. The Preferred Alternative is the fourth alternative. It was also analyzed for environmental impacts as described in Step 6.

Step 8. Selection of Resource Management Plan

The eighth step is the plan selection approval process. It will be completed after publication of the final environmental impact statement.

Step 9. Monitoring and Evaluation

The plan will be implemented according to an implementation schedule included in the Record of Decision and Final Resource Management Plan. The implementation schedule will be subject to adjustment because of possible funding constraints. If additional detailed information is needed for implementation, smaller site-specific plans will be written. The effects of implementation will then be monitored and evaluated. Standards will be developed to determine whether or not mitigation measures are satisfactory, assumptions used in analysis of impacts were correct, and whether significant changes in related Federal, state, or local land use plans have been made. Monitoring and evaluation reports will be available for public review.

Source: 1982, BLM

APPENDIX 1.3: ISSUES AND PLANNING CRITERIA

A planning issue is a matter of widespread interest and/or controversy about the allocation, use, production, protection and management practices (existing and/or potential) of the public lands.

Planning criteria are those standards which focus the planning analysis on possible solutions to resource management issues.

The following are those issues and criteria identified within the Billings Resource Area.

ISSUE 1: GRAZING MANAGEMENT PLANNING CRITERIA

Instruction Memorandum 82-292 indicates the types of criteria and process which will be used for analysis purposes in the Resource Management Plan (see Table 1). The criteria for categorizing allotments is contained in Table 2. These criteria are tentative pending final approval by the Lewistown District Grazing Advisory Board, District Manager and the State Director.

ISSUE 2: WILD HORSE MANAGEMENT PLANNING CRITERIA

1. Vegetative condition, i.e.:
 - A. Available forage/browse
 - B. Apparent trend
 - C. Utilization
2. Dietary preference/need of consumptive users.
3. Limitations on water availability and distribution for consumptive users.
4. Montana Department of Fish, Wildlife and Parks, U.S. Forest Service and National Park Service, long range goals for the area.
5. Erosion conditions.
6. Public expectations.
7. Pryor Mountain Wild Horse characteristics.

ISSUE 3: WILDLIFE PLANNING CRITERIA

1. Current use of area, i.e.: grazing, recreation and degree of conflict.
2. Potential uses of area, i.e.: mineral development, disposal and degree of conflict.
3. MDFW&P long range goals for the area.
4. Hunter use/need in area.
5. Potential for development, i.e.: nesting sites, reservoir construction, etc.
6. Anticipated impact to wildlife in case of a trade-off.

ISSUE 4: TIMBER MANAGEMENT PLANNING CRITERIA

Protection areas will be classified using one or more of the following criteria:

1. Areas surrounding sensitive or unique cultural and historical sites.
2. Wilderness study areas.
3. Elk calving areas and key winter habitat.
4. Designated recreation use areas or environmental education sites.
5. Consistency with other land use plans.
6. Social and economic concerns.
7. Visual resource management.
8. Critical watershed.

Exceptions to the protective classification will be considered under exceptional or extreme circumstances. For example: 1) instances where severe insect infestations occur where salvage is necessary, 2) where public safety is of paramount concern, 3) or where wildlife benefits outweigh other management concerns.

ISSUE 5: COAL PLANNING CRITERIA

1. Only those portions of the planning area which are underlain by coal resources of high or moderate development potential will be considered further.
2. Where adequate information exists, the 20 unsuitability criteria will be applied to lands of high/moderate development potential.
3. Qualified surface owners overlying Federal coal will be consulted for their views toward having their lands leased for coal.
4. Development of Federal coal may be further constrained or deferred by other multiple use values such as agriculture, hydrology and local social/economic concerns.

ISSUE 6: OIL AND GAS PLANNING CRITERIA

1. T&E plant and animal species habitat.
2. Crucial wildlife habitat.
3. Public attitudes and expectations for special use areas (Pryor Mountain Wild Horse Range).
4. Visual resource conflict areas.
5. Watershed conflicts.
6. Soil conditions which are subject to severe erosion.

ISSUE 7: LAND TENURE ADJUSTMENT PLANNING CRITERIA

Disposal Criteria:

1. Size of the tract and ownership pattern of the area. (320 acres or less.)
2. Proximity of the tract to population centers.
3. Lands which have been identified for specific uses by outside interest groups.
4. Lands with no significant recreational values, wildlife habitat, paleontological or cultural values.
5. Lands where water quantities are such that they don't benefit agriculture or wildlife.
6. Lands which do not contain government improvements or where such improvements are of low value.
7. Lands identified by communities for expansion and development needs.
8. Lands with no physical or legal access.
9. Lands with mineral/surface split estate.
10. Consistency with other Federal, state, local or tribal land use plans.
11. Lands with a history of long range agricultural trespass.
12. Lands which traditionally have not been leased for grazing purposes.
13. Lands with potential for intensive agricultural uses.

Retention Criteria:

1. Size of the tract and ownership pattern.
2. Lands withdrawn to BLM or other agencies.
3. Lands with mineral development potential and/or mining claims.
4. Lands with significant recreational values, wildlife habitat, paleontological or cultural values.
5. Presence of water in usable quantities for livestock grazing or agriculture, or to benefit wildlife.
6. Lands within a wilderness study area.
7. Lands containing valid existing water rights.
8. Lands with valuable government improvements present.
9. Lands with physical and legal access.
10. Lands adjacent to the Yellowstone River.

ISSUE 8: CLASSIFICATIONS PLANNING CRITERIA

1. Public attitude expectations.
2. Consistency with original purposes for classification.

ISSUE 9: RECREATIONAL ACCESS PLANNING CRITERIA

1. Consistency with other plans.
2. Access will be avoided where there are sensitive cultural or historic sites, sensitive wildlife habitats or soil conditions.
3. Public recreation opportunities which are currently in high or increasing demand and which have scarce or limited access will be considered a priority. (Example: canoeing or float boat use on Yellowstone River, fishing access.)
4. Adjacent landowner concerns will be considered before providing access.

ISSUE 10: OFF-ROAD VEHICLE USE PLANNING CRITERIA

1. Public interest or demand.
2. User conflicts.
3. Identified wildlife or cultural resource conflicts.
4. Potential for excessive soil erosion.
5. Visual resource management Class I and II areas.
6. Presence of natural or manmade hazards which cannot be mitigated.
7. User access requirements for inventory, exploration, use supervision, maintenance, development and extraction of public land resources or maintenance of facilities on public lands.
8. Wilderness study areas.

ISSUE 11: ENVIRONMENTAL EDUCATION PLANNING CRITERIA

1. Public interest will be used to determine the need for environmental education sites.
2. Bureau budgetary and personnel capabilities.
3. Demand/interest in these sites for other uses.
4. Visitor use figures.

ISSUE 12: WINDDRINKER (WILD HORSE INTERPRETATIVE OVERLOOK) PLANNING CRITERIA

1. Consistency with other plans, i.e., U.S. Forest Service, National Park Service, community of Lovell, Wyoming.
2. Visitor use figures (traffic counts in U.S. Forest Service, Pryors, Bighorns, National Park Service, BLM).
3. Cost estimates.
4. Public expectations.
5. Cultural resource values.

ISSUE 13: WILDERNESS PLANNING CRITERIA

1. Wilderness values:
 - A. The quality of the area's mandatory wilderness characteristics.
 - B. The presence or absence, and the quality of special ecological or geological features and other features of scientific and educational, scenic or historical value.
 - C. The benefits to other multiple resource values and uses which wilderness designation of the area could ensure.
 - D. The extent to which wilderness designation of the area under study would contribute to expanding the diversity of the National Wilderness Preservation System from the standpoint of:
 1. expanding the diversity of ecosystems and landforms.
 2. expanding the opportunities for solitude or recreation within a day's driving time (5 hours) of major population centers.
 3. balancing the geographic distribution of wilderness areas.
2. Manageability:

The area must be capable of being effectively managed to preserve its wilderness character.

QUALITY STANDARDS

1. Energy and mineral resource values. (Consider all identified or potential energy and mineral resource values.)
2. Impacts on other resources:

The extent to which other resource values or uses of the area would be foregone or adversely affected as a result of wilderness designation.
3. Impact of nondesignation on wilderness values, alternative uses of WSA if area is not designated as wilderness and the extent to which the wilderness values of the area would be foregone or adversely affected as a result of this use.
4. Public comment.
5. Comments received from interested and affected publics at all levels - local, state, regional and national.
6. Local social and economic effects:

Any significant social and economic effects as identified through the wilderness study process, which designation of the area would have on local areas.
7. Consistency with other plans:

The extent to which the recommendation is consistent with officially approved and adopted resource-related plans of other Federal agencies, state and local governments and Indian tribes.

CORRIDOR PLANNING CRITERIA

Avoidance Areas

1. Areas where establishment and use of corridors conflict with land use/land management objectives.
- Examples:
- A. Specially managed areas, such as areas designated for developed and primitive recreation, research natural areas, environmental education areas.
 - B. Environmentally sensitive areas (certain wildlife habitat areas, faults, wetlands, slump areas, etc.).
 - C. Archeological and historical sites.
 - D. Areas with specific visual objectives which conflict with facility placement.
 - E. Active coal mining units.
2. Areas with special or unique values that have been accorded specific and sometimes protected status through "legislative" action. These values conflict with facility placement.
 - A. National recreation areas (NRA).
 - B. Wild, scenic and recreational rivers.
 - C. Nationally classified trails.
 - D. State recreation areas.
 3. Areas which have been identified by local government bodies (within their jurisdictional boundaries) as not suitable for the placement of linear facilities.
 - A. Urban residential areas.
 - B. City parks.

Exclusion Areas

1. Include only those areas with a legal Congressional mandate that excludes linear facilities; example: national wilderness lands.

Source: BLM, 1982

Criteria for assessing lands unsuitable for all or certain stipulated methods of coal mining.

Criterion Number 1. All Federal lands included in the following land systems or categories shall be considered unsuitable: National Park System, National Wildlife Refuge System, National System of Trails, National Wilderness Preservation System, National Wild and Scenic Rivers System, National Recreation Areas, lands acquired with money derived from the Land and Water Conservation Fund, National Forests and Federal lands in incorporated cities, towns and villages.

Exceptions. (i) A lease may be issued within the boundaries of any National Forest if the Secretary finds no significant recreational, timber, economic or other values which may be incompatible with the lease; and (A) surface operations and impacts are incident to an underground coal mine, or (B) where the Secretary of Agriculture determines, with respect to lands which do not have significant forest cover within those National Forests west of the 100th meridian, that surface mining may be in compliance with the Multiple-Use Sustained-Yield Act of 1960, the Federal Coal Leasing Amendments Act of 1976 and the Surface Mining Control and Reclamation Act of 1977. (ii) A lease may be issued within the Custer National Forest with the consent of the Department of Agriculture as long as no surface coal mining operations are permitted.

Exemptions. The application of this criterion to lands within the listed land systems and categories is subject to valid existing rights, and does not apply to surface coal mining operations existing on August 3, 1977. The application of the portion of this criterion applying to land proposed for inclusion in the listed systems does not apply to lands: to which substantial legal and financial commitments were made prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 2. Federal lands that are within rights-of-way or easements or within surface leases for residential, commercial, industrial or public purposes on Federally owned surface shall be considered unsuitable.

Exceptions. A lease may be issued, and mining operations approved in such areas if the surface management agency determines that:

- (i) All or certain types of coal development (e.g., underground mining) will not interfere with the purpose of the right-of-way or easement; or
- (ii) The right-of-way or easement was granted for mining purposes; or
- (iii) The right-of-way or easement was issued for a purpose for which it is not being used; or
- (iv) The parties involved in the right-of-way or easement agree, in writing, to leasing; or
- (v) It is impractical to exclude such areas due to the location of coal and method of mining and such areas or uses can be protected through appropriate stipulations.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 3. Federal lands affected by section 522(e)(4) and (5) of the Surface Mining Control and Reclamation Act of 1977 shall be considered unsuitable. This includes lands within 100 feet of the outside line of the right-of-way of a public road or within 100 feet of a cemetery, or within 300 feet of any public building, school, church, community or institutional building or public park or within 300 feet of an occupied dwelling.

Exceptions. A lease may be issued for lands:

- (i) Used as mine access roads or haulage roads that join the right-of-way for a public road;
- (ii) For which the Office of Surface Mining Reclamation and Enforcement has issued a permit to have public roads relocated;
- (iii) If, after public notice and opportunity for public hearing in the locality, a written finding is made by the authorized officer that the interests of the public and the landowners affected by mining with 100 feet of a public road will be protected;
- (iv) For which owners of occupied buildings have given written permission to mine within 300 feet of their dwellings.

Exemptions. The application of this criterion is subject to valid existing rights, and does not apply to surface coal mining operations existing on August 3, 1977.

Criterion Number 4. Federal lands designated as wilderness study areas shall be considered unsuitable while under review by the Administration and the Congress for possible wilderness designation. For any Federal land which is to be leased or mined prior to completion of the wilderness inventory by the surface management agency, the environmental assessment or impact statement on the lease sale or mine plan shall consider whether the land possesses the characteristics of a wilderness study area. If the finding is affirmative, the land shall be considered unsuitable, unless issuance of noncompetitive coal leases and mining on leases is authorized under the Wilderness Act and the Federal Land Policy and Management Act of 1976.

Exemption. The application of this criterion to lands for which the Bureau of Land Management is the surface management agency and lands in designated wilderness areas in National Forests is subject to valid existing rights.

Criterion Number 5. Scenic Federal lands designated by visual resource management analysis as Class I (an area of outstanding scenic quality or high visual sensitivity) but not currently on the National Register of Natural Landmarks shall be considered unsuitable. A lease may be issued if the surface management agency determines that surface coal mining operations will not significantly diminish or adversely affect the scenic quality of the designated area.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 6. 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 shall be considered unsuitable for the duration of the study, demonstration or experiment, except where mining could be conducted in such a way as to enhance or not jeopardize the purposes of the study, as determined by the surface management agency, or where the principal scientific user or agency gives written concurrence to all or certain methods of mining.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 7. All districts, sites, buildings, structures and objects of historic, architectural, archeological or cultural significance on Federal lands which are included in or eligible for inclusion in the National Register of Historic Places, and an appropriate buffer zone around the outside boundary of the designated property (to protect the inherent values of the property that make it eligible for listing in the National Register) as determined by the surface management agency, in consultation with the Advisory Council on Historic Preservation and the State Historic Preservation Office shall be considered unsuitable.

Exceptions. All or certain stipulated methods of coal mining may be allowed if the surface management agency determines, after consultation with the Advisory Council on Historic Preservation and State Historic Preservation Office that the direct and indirect effects of mining, as stipulated, on a property in or eligible for the National Register of Historic Places will not result in significant adverse impacts to the property.

Exemptions. The application of this criterion to a property listed in the National Register is subject to valid existing rights, and does not apply to surface coal mining operations existing on August 3, 1977. The application of the criterion to buffer zones and properties eligible for the National Register does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 8. Federal lands designated as natural areas or as National Natural Landmarks shall be considered unsuitable.

Exceptions. A lease may be issued and mining operation approved in an area or site if the surface management agency determines that:

- (i) With the concurrence of the state, the area or site is of regional or local significance only;
- (ii) The use of appropriate stipulated mining technology will result in no significant adverse impact to the area or site; or
- (iii) The mining of the coal resource under appropriate stipulations will enhance information recovery (e.g., paleontological sites).

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which includes operations on which a permit has been issued.

Criterion Number 9. Federally designated critical habitat for threatened or endangered plant and animal species, and habitat for Federal threatened or endangered species which is determined by the Fish and Wildlife Service and the surface management agency to be of essential value and where the presence of threatened or endangered species has been scientifically documented, shall be considered unsuitable.

Exception. A lease may be issued and mining operations approved if, after consultation with the Fish and Wildlife Service, the Service determines that the proposed activity is not likely to jeopardize the continued existence of the listed species and/or its critical habitat.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 10. Federal lands containing habitat determined to be critical or essential for plant or animal species listed by a state pursuant to state law as endangered or threatened shall be considered unsuitable.

Exception. A lease may be issued and mining operations approved if, after consultation with the state, the surface management agency determines that the species will not be adversely affected by all or certain stipulated methods of coal mining.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 11. A bald or golden eagle nest or site on Federal lands that is determined to be active and an appropriate buffer zone of land around the nest site shall be considered unsuitable. Consideration of availability of habitat for prey species and of terrain shall be included in the determination of buffer zones. Buffer zones shall be determined in consultation with the Fish and Wildlife Service.

Exceptions. A lease may be issued if:

- (i) It can be conditioned in such a way, either in manner or period of operation, that eagles will not be disturbed during breeding season; or
- (ii) The surface management agency, with the concurrence of the Fish and Wildlife Service, determines that the golden eagle nest(s) will be moved.
- (iii) Buffer zones may be decreased if the surface management agency determines that the active eagle nests will not be adversely affected.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 12. Bald and golden eagle roost and concentration areas on Federal lands used during migration and wintering shall be considered unsuitable.

Exception. A lease may be issued if the surface management agency determines that all or certain stipulated methods of coal mining can be conducted in such a way, and during such periods of time, to ensure that eagles shall not be adversely disturbed.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 13. Federal lands containing a falcon (excluding kestrel) cliff nesting site with an active nest and a buffer zone of Federal land around the nest site shall be considered unsuitable. Consideration of availability of habitat for prey species and of terrain shall be included in the determination of buffer zones. Buffer zones shall be determined in consultation with the Fish and Wildlife Service.

Exception. A lease may be issued where the surface management agency, after consultation with the Fish and Wildlife Service, determines that all or certain stipulated methods of coal mining will not adversely affect the falcon habitat during the periods when such habitat is used by the falcons.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 14. Federal lands which are high priority habitat for migratory bird species of high Federal interest on a regional or national basis, as determined jointly by the surface management agency and the Fish and Wildlife Service, shall be considered unsuitable.

Exception. A lease may be issued where the surface management agency, after consultation with the Fish and Wildlife Service, determines that all or certain stipulated methods of coal mining will not adversely affect the migratory bird habitat during the periods when such habitat is used by the species.

Exemption. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 15. Federal lands which the surface management agency and the state jointly agree are fish and wildlife habitat for resident species of high interest to the state and which are essential for maintaining these priority wildlife species shall be considered unsuitable. Examples of such lands which serve a critical function for the species involved include:

- (i) Active dancing and strutting grounds for sage grouse, sharp-tailed grouse and prairie chicken;
- (ii) Winter ranges most critical for deer, antelope and elk; and
- (iii) Migration corridors for elk.

A lease may be issued if, after consultation with the state, the surface management agency determines that all or certain stipulated methods of coal mining will not have a significant long-term impact on the species being protected.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 16. Federal lands in riverine, coastal and special floodplains (100-year recurrence interval) on which the surface management agency determines that mining could not be undertaken without substantial threat of loss of life or property shall be considered unsuitable for all or certain stipulated methods of coal mining, and to the natural and beneficial values of the floodplain on the lease tract and downstream.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 17. Federal lands which have been committed by the surface management agency to use as municipal watersheds shall be considered unsuitable.

Exception. A lease may be issued where the surface management agency in consultation with the municipality (incorporated entity) or the responsible governmental unit determines, as a result of studies, that all or certain stipulated methods of coal mining will not adversely affect the watershed to any significant degree.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 18. Federal lands with National Resource Waters, as identified by states in their water quality management plans, and a buffer zone of Federal lands 1/4 mile from the outer edge of the far banks of the water, shall be unsuitable.

Exception. The buffer zone may be eliminated or reduced in size where the surface management agency determines that it is not necessary to protect the National Resource Waters.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Criterion Number 19. Federal lands identified by the surface management agency, in consultation with the state in which they are located, as alluvial valley floors according to the definition in § 3400.0-5(a) of this title, the standards in 30 CFR Part 822, the final alluvial valley floor guidelines of the Office of Surface Mining Reclamation and Enforcement when published and approved state programs under the Surface Mining Control and Reclamation Act of 1977, where mining would interrupt, discontinue or preclude farming, shall be considered unsuitable. Additionally, when mining Federal land outside an alluvial valley floor would materially damage the quantity or quality of water in surface or underground water systems that would supply alluvial valley floors, the land shall be considered unsuitable.

Exemptions. This criterion does not apply to surface coal mining operations which produced coal in commercial quantities in the year preceding August 3, 1977, or which had obtained a permit to conduct surface coal mining operations.

Criterion Number 20. Federal lands in a state to which is applicable a criterion (i) proposed by that state, and (ii) adopted by rulemaking by the Secretary, shall be considered unsuitable.

Exceptions. A lease may be issued when:

- (i) Such criterion is adopted by the Secretary less than 6 months prior to the publication of the draft comprehensive land use plan or land use analysis plan, or supplement to a comprehensive land use plan, for the area in which such land is included; or
- (ii) After consultation with the state, the surface management agency determines that all or certain stipulated methods of coal mining will not adversely affect the value which the criterion would protect.

Exemptions. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Underground mining exemption from criteria.

- (a) Federal lands with coal deposits that would be mined by underground mining methods shall not be assessed as unsuitable where there would be no surface coal mining operations, as defined in § 3400.0-5 of this title, on any lease, if issued.
- (b) Where underground mining will include surface operations and surface impacts on Federal lands to which a criterion applies, the lands shall be assessed as unsuitable unless the surface management agency finds that a relevant exception or exemption applies.

APPENDIX 1.5: OIL AND GAS STIPULATIONS

UNITED STATES DEPARTMENT OF THE INTERIOR
Bureau of Land Management

(Serial Number)

OIL AND GAS LEASE STIPULATIONS

CULTURAL AND PALEONTOLOGICAL RESOURCES — The Federal surface management agency is responsible for assuring that the leased lands are examined to determine if cultural resources are present and to specify mitigation measures. Prior to undertaking any surface-disturbing activities on the lands covered by this lease, the lessee or operator, unless notified to the contrary by the authorized officer of the surface management agency, shall:

1. Engage the services of a qualified cultural resource specialist acceptable to the Federal surface management agency to conduct an intensive inventory for evidence of cultural resource values;
2. Submit a report acceptable to the authorized officer of the surface management agency and the District Engineer, Geological Survey; and
3. Implement mitigation measures required by the surface management agency to preserve or avoid destruction of cultural resource values. Mitigation may include relocation of proposed facilities, testing and salvage or other protective measures. All costs of the inventory and mitigation will be borne by the lessee or operator, and all data and materials salvaged will remain under the jurisdiction of the U.S. Government as appropriate.

The lessee or operator shall immediately bring to the attention of the District Engineer, Geological Survey, or the authorized officer of the Federal surface management agency any cultural or paleontological resources or any other objects of scientific interest discovered as a result of surface operations under this lease, and shall leave such discoveries intact until directed to proceed by the District Engineer, Geological Survey.

ENDANGERED OR THREATENED SPECIES — The Federal surface management agency is responsible for assuring that the leased land is examined prior to undertaking any surface-disturbing activities to determine effects upon any plant or animal species, listed or proposed for listing as endangered or threatened, or their habitats. The findings of this examination may result in some restrictions to the operator's plans or even disallow use and occupancy that would be in violation of the Endangered Species Act of 1973 by detrimentally affecting endangered or threatened species or their habitats.

The lessee/operator may, unless notified by the authorized officer of the surface management agency that the examination is not necessary, conduct the examination on the leased lands at his discretion and cost. This examination must be done by or under the supervision of a qualified resources specialist approved by the surface management agency. An acceptable report must be provided to the surface management agency identifying the anticipated effects of a proposed action on endangered or threatened species or their habitats.

ESTHETICS — To maintain esthetic values, all surface-disturbing activities, semipermanent and permanent facilities may require special design including location, painting and camouflage to blend with the natural surroundings and meet the intent of the visual quality objectives of the Federal surface management agency.

EROSION CONTROL — Surface disturbing activities may be prohibited during muddy and/or wet soil periods. This limitation does not apply to operation and maintenance of producing wells using authorized roads.

CONTROLLED OR LIMITED SURFACE USE STIPULATION — This stipulation may be modified when specifically approved in writing by the District Engineer, Geological Survey, with concurrence of the Federal surface management agency. Distances and/or time periods may be made less restrictive depending on the actual onground conditions. The prospective lessee should contact the Federal surface management agency for more specific locations and information regarding the restrictive nature of this stipulation.

The lessee/operator is given notice that the lands within this lease may include special areas and that such areas may contain special values, may be needed for special purposes, or may require special attention to prevent damage to surface and/or other resources. Possible special areas are identified below. Any surface use or occupancy within such special areas will be strictly controlled or, if absolutely necessary, excluded. Use or occupancy will be restricted only when the Geological Survey and/or the surface management agency demonstrates the restriction necessary for the protection of such special areas and existing or planned uses. Appropriate modifications to imposed restrictions will be made for the maintenance and operations of producing oil and gas wells.

After the Federal surface management agency has been advised of specific proposed surface use or occupancy on the leased lands, and on request of the lessee/operator, the Agency will furnish further data on any special areas which may include:

100 feet from the edge of the rights-of-way from highways, designated county roads and appropriate federally-owned or controlled roads and recreation trails.

500 feet, or when necessary, within the 25-year flood plain from reservoirs, lakes, and ponds and intermittent, ephemeral or small perennial streams; 1,000 feet, or when necessary, within the 100-year flood plain from larger perennial streams, rivers, and domestic water supplies.

500 feet from grouse strutting grounds. Special care to avoid nesting areas associated with strutting grounds will be necessary during the period from March 1 to June 30. One-fourth mile from identified essential habitat of state and federal sensitive species. Crucial wildlife winter ranges during the period from December 1 to May 15, and in elk calving areas, during the period from May 1 to June 30.

300 feet from occupied buildings, developed recreational areas, undeveloped recreational areas receiving concentrated public use and sites eligible for or designated as National Register sites.

Seasonal road closures, roads for special uses, specified roads during heavy traffic periods and on areas having restrictive off-road vehicle designations.

On slopes over 30 percent, or 20 percent on extremely erodable or slumping soils.

Date

A-9

Lessee's Signature

APPENDIX 1.6: STATE DIRECTOR GUIDANCE LAND PATTERN REVIEW CRITERIA
(TAKEN FROM STATE DIRECTOR GUIDANCE FOR RESOURCE MANAGEMENT PLANNING
IN MONTANA AND THE DAKOTAS, APRIL, 1983).

LAND PATTERN REVIEW CRITERIA

The public lands subject to these criteria are those lands, minerals, or interests in land administered by BLM. Criteria are presented to assist in categorizing the public lands for retention, disposal, or further study. Criteria are also provided to facilitate the selection of lands to be received in exchanges or other types of acquisition. The criteria range from specific to general and are designed to provide direction for statewide consistency while allowing the manager flexibility in identifying circumstances which dictate the category in which lands can be placed.

- A. Retention - These are lands which will remain in public ownership and be managed by BLM. BLM is interested in exchanges to improve manageability of areas important with public values. Although the underlying philosophy is long term public ownership, minor adjustments involving sales and exchanges of lands may occur when the public interest is better served.
1. Areas of national environmental significance, including but not limited to:
 - a. Wilderness, Wilderness Study Areas and Former WSAs being Studied for Protective Management
 - b. Wild & Scenic Rivers
 - c. National Scenic & Historic Trails and Study Trails
 - d. National Conservation Areas
 - e. Wetlands and Riparian Areas under Executive Order 11990.
 - f. Other Congressionally Designated Areas and Study Areas
 - g. Wild Horse Management Areas
 - h. Areas of Critical Environmental Concern
 2. Areas of national economic significance including, but not limited to:
 - a. Designated Mineral Resource Areas where disposal of the surface would unnecessarily interfere with the logical development of the mineral estate, e.g., surface minerals, coal, phosphate, known geologic structures, etc.
 - b. Public lands containing strategic minerals needed for national defense.
 3. Public lands used in support of national defense, including but not limited to National Guard maneuver areas.
 4. Areas where management is cost-effective or lands containing other important characteristics and public values which can best be managed in public ownership by BLM, including but not limited to:
 - a. strategic tracts along rivers, streams, lakes, ponds, springs, and trails
 - b. community watersheds and/or floodplains
 - c. wildlife priority areas as identified in Appendix 1
 - d. important hunting or fishing areas
 - e. recreation sites and areas
 5. Lands with a combination of broad multiple use values which dictate they should be retained in public ownership and managed by BLM.
 6. Areas where future plans will lead to further consolidation and improvement of land patterns and reduce the costs of management.
 7. Areas which the general public, state and local government consider suitable for permanent public ownership.
 8. Public lands withdrawn by the BLM or other federal agency for which the purpose of the withdrawal remains valid and the resource uses can be managed by BLM concurrently.
 9. Public lands that contribute significantly to the stability of the local economy by virtue of federal ownership.
 10. Public lands which provide public access and contain previously mentioned public values which, when considered together, warrant their retention.
- B. Disposal - These are lands identified for potential removal from public ownership through sale or exchange, or through transfer to federal, state, county or local public entities. In addition to land internally identified for disposal, BLM will respond to proposals from the public. Disposal decisions will be made in the public interest based upon the following criteria.
1. Lands specifically identified through land use plans for sale, exchange, transfer or Recreation and Public Purposes Act applications.
 2. Lands of limited public value.
 3. Widely scattered parcels which are difficult for BLM to manage with anything beyond minimal custodial administration.
 4. Lands with high public values proper for management by other federal agencies, or state or local government. Incorporate, when applicable, the objectives of the Secretary's Good Neighbor Policy.*
 5. Lands which will serve important public objectives (such as community expansion) as provided in FLPMA Sec. 203(a)(3).

*The Secretary's program inviting state governors to participate in the nomination of federal lands needed by state and local governments and to expedite their transfer under the Recreation and Public Purposes Act.

6. Lands where disposal would aid in aggregating or repositioning other public lands or public land resource values in retention areas to facilitate national, state and local objectives.
 7. Lands acquired for a specific federal purpose which are no longer required for that or any other federal purpose.
 8. Lands with long term unauthorized use problems, and are not required for specific public purposes.
 9. Lands where disposal would increase the range of economic opportunities provided to the general public.
 10. Lands in which the highest value or most appropriate long term use is agriculture, commercial or industrial development.
 11. Lands involved in BLM/FS jurisdictional transfer, state indemnity selections, ongoing exchanges will continue as initiated.
- C. Further Study - Lands that fail to clearly meet either retention or disposal criteria, will be subject to further study. Lands in this category will include:
1. Lands where disposition would pose questions as to consistency with other federal, state, local government or tribal land use plans.
 2. Lands under withdrawal review.
 3. Lands where less than full fee conveyance would reserve specifically identified significant public values to protect public interests.
 4. Lands where management is not cost-effective, but not clearly negative, and multiple use values are marginal.
 5. Lands where cooperative management best serves the public interest.
 6. Lands with potential for future public use-based on developing needs.
 7. Lands with potential for transfer under the Good Neighbor program.
 8. Lands in areas of public access deficiencies.
- D. Selection Criteria - Used to evaluate proposals which would result in the transfer of lands or minerals to the Bureau of Land Management through exchange or other transactions.

These criteria help to assure that any BLM decision to acquire a tract of land provides significant public benefits. The criteria range from "general" standards, against which to evaluate all proposals, to "specific" guidelines covering the selected or prioritized program areas.

These standards are designed to provide consistent direction while allowing the line manager flexibility to meet local, state and national needs.

GENERAL CRITERIA

All proposals will be evaluated to determine if the selected lands will:

1. Facilitate access to areas retained for long term public use.
2. Enhance Congressionally designated areas, rivers or trails.
3. Be primarily focused in the "retention" areas. Acquisition in "Further Study" areas or "disposal" areas will only be considered if the action leads to and/or facilitates long term needs or program objectives.
4. Facilitate national, state and local BLM priorities or mission statement needs.
5. Place emphasis where BLM land use or activity plans are completed. Proposals must facilitate implementation and/or be consistent with these plans.
6. Stabilize or enhance local economies or values.
7. Meet long term public land management goals as opposed to short term.
8. Be of sufficient size to improve use of adjoining public lands or, if isolated, large enough in scale to allow the identified potential public land use.
9. Allow more diverse use, more intensive use, or a change in uses to better fulfill the Bureau's mission.
10. Maintain or enhance important and recognized public land values. Especially noteworthy are identified, designated, special or high interest value areas.
11. Enhance the opportunity for new or emerging public land uses or values.
12. Contribute to a wide spectrum of uses or large number of public land users.
13. Facilitate management practices, uses, scale of operations or degrees of management intensity that are viable under economic program efficiency standards.
14. Secure for the public significant water related land interests. These interests will include lake shore, river front, stream, pond or spring sites.



United States Department of the Interior

2355 (3/83)

BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240

June 18, 1981

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Organic Act Directive No. 81-11

To: Directorate, AFOS

From: Director

Subject: Review of Land Classifications

A number of States have asked for guidance in the review of classifications called for by Section 202(d) of the Federal Land Policy and Management Act (FLPMA). Pending completion of Bureau of Land Management (BLM) Manual Section 2355, Withdrawal Review, the following precepts and procedures apply:

A. Land classifications technically are not withdrawals (Associate Solicitor's memorandum of August 19, 1980), and are subject to the review provisions of Section 202(d) rather than 204(1) of FLPMA. Organic Act Directive (OAD) No. 78-49 of July 19, 1978, which held otherwise, is being cancelled. However, because certain classifications segregate lands from operation of some or all of the public land laws, including at times mining, they are considered to be in the category of "de facto withdrawals" — to be systematically reviewed as part of the Bureau's overall withdrawal review program.

B. OAD No. 81-4 of March 2, 1981, set no accelerated target dates for completing a review of classification orders. Rather, such was to be accomplished by Fiscal Year 1992. Continuing emphasis upon elimination of public land "lock-ups," however, now makes it clear that the 1992 date was unrealistic, and that the Bureau must complete most, if not all, of its classification review in a much shorter period. Recent budget proposals call for essential completion by the end of FY-83, and State Offices should plan accordingly.

C. Classifications created under the expired Classification and Multiple Use Act (CMU) close substantial public land areas to varying ranges of public use. Some of these classifications are no longer appropriate, or restrict activities which should be subject to the discretion of the land manager. The Bureau will effect a determined effort to cancel a large percentage of these classifications so that a full range of uses can be considered — on a case-by-case basis — predicated upon the principles of multiple-use planning. The following review and cancellation criteria apply:

1. General Criteria.

- a. The goal is elimination, as rapidly as practicable, of all CMU classifications. Whenever possible review of such classifications should be integrated with land use planning for an area.

APPENDIX 1.8: SUMMARY OF ALLOTMENTS BY CATEGORY

"M" Category

Allotment Number	Name	Preference Code	Management Status	Livestock		Season of Use	AUMs		Acres		Range Condition % Good and Excellent
				No.	Class		BLM	Other	BLM	Other	
4003	Stateline	3			S C	04/20-06/05 04/25-11/21	2,127		21,738	18,191 (private) 1,983 (state) 160	52
4110	Crooked Creek	3		3	C	03/01-02/28	32		320		
4111	Paradise	3	AMP	159	C	04/20-06/19			1,308	2,144 (private)	9
4113	Bowler	3	AMP	472	C	10/01-02/20 04/15-12/14	226 874		8,274	6,355 (private) 640 (state)	42
4114	Crow	3	AMP	120	C	03/01-10/30	161		1,407	1,861 (private)	43
4118	Lower Sage Creek	3		200	C	12/01-01/15	110		1,088		
4119	Cherry Creek	3		152	C	05/01-11/30	308		2,311	6,801 (private)	64
4120	Lower Bluewater	3		95	C	03/01-10/31	76	711	100	1,276 (private) 40 (state)	0
4126	Deadman	3		200	C	04/24-10/20					
4129	Pfeifer Ind.	3		20	H	06/01-08/31	250		1,338		
4131	Black Butte	3		50	C	05/15-09/15	92		744	900 (private)	77
4132	Limestone	3		75	C	05/01-06/30					
4133	Railroad	3		75	C	10/01-11/15	275		2,144	3,807 (private)	80
4134	Crooked Creek	3		9	C	03/01-02/28	107		904	831 (private)	18
4135	Lewis	3		16	C	03/01-02/28	196		1,992	4,184 (private) 640 (state)	32
4136	Piney Creek	3		1	C	03/01-09/30	7		720		
4903	Milton Ind.	3		1	C	03/01-02/28	12		40		
4905	Individual	3		2	C	03/01-02/28	28		269	113 (private)	92
4906	Wilckens Ind.	3		153	C	05/15-11/15	915		3,055	1,611 (private)	100
4907	Johnke Ind.	3		8	C	03/01-02/28	97		480		
4908	Adolph Ind.	3		5	C	03/01-02/28	313		1,298		
4909	Griffith Ind.	3		125	C	05/20-12/15	528		2,487	1,924 (private)	86
4918	Johnson Ind.	3		5	C	03/01-02/28	62		160		allotment unclassified
4919	Lind Ind.	3		66	C	03/01-02/28	566		1,261	781 (private)	100
4920	Wacker Ind.	3		131	C	03/01-02/28	375		*1,199	662 (state)	*100
4921	(Sage Hen)	3	AMP	26	C	10/01-02/28	133		1,120		
4922	Wacker Ind.	3		106	C	05/01-10/31	278		988	425 (private)	79
4923	P. Goffena Ind.	3		9	C	03/01-02/28	102		317		
4924	R. Goffena Ind.	3		31	C	03/01-02/28	364		962		100
4926	Pelan Ind.	3		24	C	03/01-02/28	287		1,280		
4927	Lackey Ind.	3		25	C	03/01-02/28	304		1,021		
4928	Jackson Ind.	3		3	C	03/01-02/28	36		160		
4929	Sudan Ranch	3		23	C	03/01-02/28	271		995		
4930	Anderson Ind.	3		14	C	03/01-02/28	162		600		
4931	Corgiat Ind.	3		4	C	03/01-02/28	45		200		
4932	Cruikshank Ind.	3		18	C	03/01-02/28	211		720		
4933	Eliasson Ind.	3		7	C	05/15-10/14	37		160		
4934	Ellis Ind.	3		6	C	03/01-02/28	74		320		
4935	Raths Ind.	3		43	C	03/01-02/28	516		2,073		
4936	Harmun Ind.	3		19	C	03/01-02/28	230		800		
4937	Ellis Ind.	3		19	C	07/01-10/15	69		680		
4938	Jarrett Ind.	3		18	C	03/01-02/28	210		640		28
4939	Lake Mason GA	3	AMP	3	C	03/01-02/28	39		160		
4941	Parrott Ind.	3		27	C	03/01-02/28	315		*1,250	722 (private) 640 (state)	*100
4942	Mehling Ind.	3		1	C	03/01-02/28	12		40		
4943	Neshlem Ind.	3		41	C	03/01-02/28	489		*639		*100
4944	Iverson Ind.	3		4	C	03/01-02/28	47		160		
4949	Alexander A & B	3		260	C	05/15-12/15	1,298		4,867	985 (private) 1,011 (state)	79
4950	Vescovi Ind.	3		1	C	03/01-02/28					
4951	Individual	3		50	C	05/01-09/30	259		*348		*100
4952	Parrott Ind. B	3		49	C	03/01-02/28					
4953	Milton Ind.	3		1	C	03/01-08/31	595		*2,204	*158 (private)	*96
4954	Dybvik Ind.	3		7	C	05/01-10/31	41		160		
4955	Graves Ind.	3		14	C	03/01-02/28	164		637		
4956	Pearce/Shipp	3		39	C	03/01-02/28	369		1,278	*633 (private)	55
4957	Harris Ind.	3		3	C	06/15-09/30	137		640		
4958	Hockmuth Ind.	3		6	C	03/01-02/28	64		160		
4959	Jasbeck Ind.	3		150	C	03/01-02/28	1,626		5,776		
4960	Hockmuth Ind.	3		150	C	03/01-05/15					
4961	Jasbeck Ind.	3		150	C	11/16-02/28	401		1,180		
4962	Kombol Ind.	3		24	C	03/01-02/28	288		800		
4963	Mang Ind.	3	AMP	5	C	03/01-02/28	114		320		
4964	Oset Ind.	3		25	S	03/01-02/28	12		40		
4965		3		1	C	03/01-02/28	245		638		100
4966		3		10	C	03/01-02/28	125		320		

APPENDIX 1.8: SUMMARY OF ALLOTMENTS BY CATEGORY (Continued, Page 2)

Number	Allotment Name	Preference Code	Management Status	Livestock		Season of Use	AUMs		Acres		Range Condition % Good and Excellent
				No.	Class		BLM	Other	BLM	Other	
4981	Pronghorn Ranch	3			C	03/01-02/28	1,356		*6,054	3,518 (private) 1,272 (state)	
4982		3		8	C	03/01-02/28	96		320		
4983	DeVries Ind.	3		18	C	04/15-11/15	127		481		
				42	C	04/15-11/15	313		822		
4984	Wacker Ind.	3		153	C	05/01-11/30	257		664		
4985	Zimmerman Ind.	3		4	C	03/01-02/28	50		160		
4988	Stanley AMP	3	AMP	184	C	05/05-10/05	734		2,981	10 (private) 800 (state)	97
4991	Lower Musselshell	3		14	C	03/01-02/28	169		847		
4995	L. Goffena Ind.	3		5	C	03/01-02/28	55		240		
5204	Dry Creek Common	3			C	03/01-02/28	108	1,086	1,400	7,110	
5205	Individual	3		1	C	03/01-07/31	5		32		
5209	Individual	3		11	C	03/01-02/28	139		1,195		
5213	Cottonwood	3	AMP		C	05/01-11/15	733		14,172	6,445 (private) 1,015 (state)	89
5214	Wade	3		650	S	04/25-06/15					
				650	S	10/15-12/15	151		2,150	1,692 (private) 551 (state)	99
5217	Jack Creek	3	AMP		S	Under AMP					
					C	Under AMP	536		8,329	69 (private) 1,279 (state)	87
5220	H.D. Bischoff	15		2	C	03/01-02/28	16		80		
5221	Individual	3		5	C	03/01-02/28	68		598		
5225	Grove Creek	3	AMP	322	C	03/01-02/28	1,295		9,173	14,334 (private) 1,000 (state)	56
5229	Individual	3		5	C	03/01-02/28	56		332		27
5232	Deer Mountain	3		20	C	05/01-10/31	120		932	125 (private)	87
5233	Home Pasture	3		4	C	03/01-02/28	52		255		
5235	Hollenbeck	3		80	C	04/01-09/30	425		6,399	235 (private) 620 (state)	89
5300	Upper Buffalo Com.	3			C	03/01-02/28	411		*1,907	195 (private)	*76
5301	Ralph Botts Area	3		8	C	03/01-02/28	106		800		
5302	Burk Common	3	AMP		C	05/01-11/30	389		1,959	952 (private) 639 (state)	82
5304	South Pompey	3	AMP	70	C	05/01-10/31	391		3,002	1,022 (private)	96
5305	Lehman Ind.	3		15	C	03/01-02/28	183		1,280		
5307	Mill Creek Common	3			C	04/01-11/30	127		960		
5308	Individual	3		11	C	03/01-02/28	132		640		
5312	Central K Henry	3	AMP	48	C	06/01-10/31	241		659	1,037 (private) 131 (state)	100
5314	McCormick Springs	3		23	C	03/01-02/28	278		4,003		
5315	Eddleman Exchange of Use (E/U)	3		44	C	03/01-02/28		E/U			
5316	Buffalo Creek	3	AMP	176	C	03/01-02/28	449		5,861	16,164 (private) 2,659 (state)	98
5318	North Otis	3	AMP		C	05/15-10/15	175		1,352	794 (private)	91
5319	East Pasture	3		25	C	05/01-08/31	42				
5322	Johnson Ind.	3		8	C	03/01-02/28	105		318		
5323	Keller Ind.	3		3	C	03/01-02/28	38		179		
5325	Hudson Ind.	3		3	C	03/01-02/28		E/U			
5326	Lambrecht Ind.	3		6	C	03/01-02/28	69		480		
5331	Individual	3		20	C	03/01-02/28	249		1,733		
5332	Meredith Ind.	3		66	C	04/01-06/20					
				32	C	11/01-11/30	231		840		
5333	Individual	3		31	C	06/01-11/30	183				
5336	North K Henry	3		16	C	03/01-02/28		E/U			
5337	Grasshaven	3			C	03/01-02/28	681		1,120		
5338	Fisher Pasture	3		14	C	03/01-02/28	166		1,033		
5339	System Ranch	3		9	C	03/01-02/28	104		1,528		
5340	Individual	3		8	C	03/01-02/28	92		1,120		
5341	Shelhammer Ind.	3		8	C	03/01-02/28	177		1,076		
5342	Plotts & Swanson	3		1	C	03/01-02/28	15		80		
5343	Pompeys Pillar Cr.	3		17	C	03/01-02/28		E/U	1,140		
5344	South Otis	3		4	C	03/01-02/28	45		320		
5345	Shelhammer 30 Mile	3		7	C	03/01-02/28	80		1,465		
5346	Robert Ind.	3		4	C	03/01-02/28	50		320		
5348	Hawk Creek	3	AMP		C	04/16-09/30	433		2,248		44
5350	Welborn Ind.	3		77	C	11/01-02/28	273		*1,854	2,764 (private) 329 (state)	*100
5352	Roen Ind.	3		8	C	04/07-11/06	56				
5355	John Brown Ind.	3		30	C	03/01-02/28	348		1,760		
5358	Individual	3		17	C	03/01-02/28	207		1,280		
5360	Wegner Indep.	3		19	C	03/01-02/28	224		1,160		
5361	Propp Ind.	3		4	C	03/01-02/28	50		320		
5362	East End Common	3			C	03/01-02/28	785				
5363	Individual	3		4	C	03/01-02/28	53		320		
5366	Turley Pasture	3		2	C	03/01-02/28	21		140		
5368	Home Pasture	3		147	C	12/01-03/31	60		747	994 (private)	100
5369	Section 19 Pasture	3		20	C	04/01-06/15					
				7	H	04/01-11/30	91		622	155 (private)	90

APPENDIX 1.8: SUMMARY OF ALLOTMENTS BY CATEGORY (Continued, Page 3)

"M" Category

Number	Allotment Name	Preference Code	Management Status	Livestock		Season of Use	AUMs		Acres		Range Condition % Good and Excellent
				No.	Class		BLM	Other	BLM	Other	
5370	Pickett Spr. Past.	3		29	C	03/01-02/28	343		*2,517		*
5372	Mill Creek Allot.	3		14	C	05/20-10/30	75		640		61
5373	Hanson Springs	3			C	04/07-11/30	519		1,419	1,519 (private)	81
5375	Individual	3		4	C	05/15-11/15		E/U	68		
5377	North Pompey	3		5	C	03/01-09/30	34		233		
5378	Propp Independent	3		18	C	03/01-02/28	213		957	958 (private) 601 (state)	96
5379	T Hanging Heart	3		9	C	03/01-02/28	103		686		
5380	Bow Tie Ind.	3		14	C	03/01-02/28	167		1,112		
5381	R. Brown Sons Ind.	3						E/U	1,827	320 (private)	81
5453	Keebler	15		10	C	09/01-01/31	49		215		
5464	South Fork	15	USFS AMP	20	C	07/01-10/15	70		160		
5505	Nature Conservancy	15		24	C	07/01-08/01	24		120		
5532	E.J. & Vera Roberts	15		4	C	03/01-02/28	42		107		
5565	Blair Ind.	3		6	C	05/01-06/01	6		25		
9648	Adams Ind.	15		1	C	03/01-02/28	7		40		
9654	Anderson Ind.	15		1	C	03/01-02/28	13		40		
9661	Bedford	15		12	C	03/01-02/28	152		479		
9682	Con Coal Co.	15		1	C	03/01-02/28	13		80		
9685	W. Crawford	15		1	C	03/01-02/28	13		40		
9689	B.H. Davis	15		8	C	03/01-02/28	90		320		
9712	Foster Ind.	15		14	C	10/15-02/28	62		200		
9718	Godfrey	15		1	C	03/01-02/28	20		80		
9719	Goffena L & L Co.	15		8	C	03/01-02/28	98		320		
9720	W. & B. Goffena	15		1	C	03/01-02/28	7		40		
9730	Hillman Ind.	15		2	C	03/01-02/28	29		80		
9740	Jennaway Ind.	15		1	C	03/01-02/28	13		65		
9744		15		10	C	03/01-02/28	121		520		
9772	Martinsdale Ind.	15		6	C	03/01-02/28	80		200		
9789	Nyquist Ind.	15		1	C	03/01-02/28	8		31		
9791	Jackson Ind.	3		28	C	03/01-02/28	340		1,042		
9824	Steffans Ind.	15		3	C	05/01-09/30	15		80		
							*37,335		210,224		

156 "M" Allotments

* Acreage figures and percentages reflect only those portions within the allotment that were inventoried.

"I" Category

1083	Clarks Fork	3							1,676	986 (state)	47
4101	Dryhead	3	AMP			Under AMP		982 (NPS)		11,302 (NPS)	1
										134 (private)	
										70 (state)	
4125	Upper Sage Creek	3		15	C	05/01-09/30	76		469	627 (private)	0
4137	Marte Allen	3		20	C	04/16-05/20		20 (NPS)		898 (NPS)	0
4940	Johnson Ind.	3		35	C	04/01-12/31	312		1,399	320 (private)	11
4945	Newton Ind.	3		110	C	05/01-11/30	531		1,963	499 (private)	37
4946	Ordracek Ind.	3		25	C	03/01-02/28					
				40	C	04/10-07/05					
				75	C	10/01-02/15	681		*3,086	1,809 (private)	*58
4947	Raths Ind.	3		1	C	03/01-02/28					
				750	C	03/01-05/31					
				741	C	10/16-02/28					
				28	C	04/01-12/31	1,825		*5,742	6,178 (private) 644 (state)	*68
4948	Kee Ind.	3		15	C	03/01-02/28					
				65	C	05/01-11/15	509		1,579	184 (private)	79
4954	Newton (Rath)	3		104	C	11/01-01/01	208		842		3
4969	Adolph	3			C	03/01-02/28	264		960		70
4971	Devils Basin Unit	3			C	03/01-02/28	2,142		*7,937	2,486 (private) 408 (state)	*65
5202	Cub Creek	3	AMP		C	05/01-01/15	1,505		16,759	8,063 (private) 1,020 (state)	47
5203	Bischoff	3			C	06/15-09/30	1,098		9,188	14,990 (private) 1,455 (state)	39
5210	Williams Basin	3	AMP		C	05/15-11/16	997		10,235	966 (private) 638 (state)	44
5224	South Dry Creek	3			C	02/01-04/30	90		1,472	864 (private)	41
5311	Southwest End	3	AMP	45	C	05/01-10/31	455	98	2,489	276 (private) 615 (state)	40
5320	Steamboat Butte	3			C	05/01-08/31	278		1,798	399 (private)	89
5321	South K Henry	3	AMP	75	C	05/01-09/30	164	82	2,366	1,013 (private)	83
5356	Hibbard Creek	3	AMP	82	C	03/01-12/31	692	112	3,335	4 (private) 639 (state)	60

APPENDIX 1.2: SUMMARY OF ALLOTMENTS BY CATEGORY (Continued, Page 4)

"I" Category

Number	Allotment Name	Preference Code	Management Status	Livestock		Season of Use	AUMs		Acres		Range Condition % Good and Excellent
				No.	Class		BLM	Other	BLM	Other	
5367	Heifer Pasture	3		42	C	03/01-07/31	208		*1,227	23 (state)	*61
5371	James Pasture	3		14	C	03/01-02/28	169		957	640 (state)	65
							12,218	BLM (includes 14 AUMs nonuse)	75,479	BLM	
							1,002	NPS	12,200	NPS	
							*13,220		87,679		

* Acreage figures and percentages reflect only those portions within the allotment that were inventoried.

"C" Category

1005	Gravelly	3		200	C	05/07-05/21	60		4,010	105 (private) 640 (state)	14
1011	Petroglyph	3		406	C	05/07-05/21	140		2,778	732 (state)	8
4100	North Fork	3		4	C	03/01-02/28	48		230		
4103	Individual	3		2	C	04/01-02/28	24		80		
4104	Upper Bluewater	3		5	C	03/01-02/28	63		540		
4105	Gyp Springs	3	AMP		C	04/15-06/30	1,133		25,717	47 (private) 1,004 (state)	45
						10/01-11/15					
4106	Individual	3		3	C	03/01-02/28	36		200		
4107	Middle Fork 5 Mile	3		4	C	05/15-10/30	20		120		
4108	Individual	3		1	C	05/15-10/30	5		20		
4109	East Bluewater	3		65	C	06/01-12/01	117	* does not include 92 nonuse	880		
4112	Individual	3		4	C	03/01-12/31	40		520		
4115	Bluewash	3	AMP		C	04/01-06/30	1,739		16,836	3,230 (private) 1,154 (state)	27
						09/15-11/03					
4116	Individual	3		8	C	03/01-02/28	94		320		
4117	Individual	3		1	C	05/15-10/30	5		20		
4121	Five Mile Creek	3		2	C	05/15-10/30	10		40		
4122	Individual	3		24	C	05/15-10/30	132		520		
4123	Individual	3		3	C	05/15-10/30	16		80		
4127	Bridger Creek	3		3	C	03/01-02/28	32		320		
4128	Individual	3		3	C	03/01-02/28	37	66	240	1,160	
4904	Goffena Ind.	3		2	C	03/01-02/28	28		120		
4911	Goffena	3		17	C	03/01-02/28	195		640		
4912	Careless	3		10	C	03/01-02/28	120		600		
4913	Jensen Ind.	3		3	C	03/01-02/28	31		187		
4914	Lehfeldt Ind.	3		2	C	03/01-02/28	17		80		
4915	Mashino Ind.	3		5	S	03/01-02/28	12		80		
4916	Mercer Ind.	3		1	C	03/01-02/28	9		40		
4917	Individual	3		4	C	03/01-02/28	48		200		
4986	Bohlman	3		1	C	03/01-11/30	9		40		
4987	Brillhart Ind.	3		1	C	03/01-02/28	9		40		
4989	DeJaegher Ind.	3		16	C	03/01-02/28	193		1,011		
4993	Goffena	3		7	C	03/01-02/28	80		360		
4994	J. Goffena Ind.	3		8	C	03/01-02/28	102		520		
4996	Goffena Ind.	3		8	C	03/01-02/28	94		480		
4997	R. Goffena Ind.	3		2	C	03/01-02/28	22		120		
4998	W. Goffena Ind.	3		4	C	03/01-02/28	48		200		
4999	Harvey Ind.	3		1	C	03/01-02/28	4		40		
5000	H. & H. Ind.	3		5	C	03/01-02/28	62		239		
5002	Highland Ind.	3		9	C	03/01-02/28	110		512		
5004	Hougen Ind.	3		2	C	03/01-02/28	24		80		
5006	Kincheloe Corp. Ind.	3		4	C	03/01-02/28	48		240		
5008	Mack Ind.	3		2	C	03/01-02/28	17		160		
5012	Stensvad Inc. Ind.	3		3	C	03/01-02/28	36		160		
5020	Hougen Ind.	3		12	C	03/01-02/28	150		640		
5200	Individual	3		4	C	03/01-12/31	40	170	160	600	
5201	Individual	3		1	C	05/01-11/30	7	253	40	1,010	
5206	Individual	3		22	S	06/01-10/15	20	60	200	160	
5207	Anderson Ind.	3		1	H	03/01-10/31	7	24	80	400	
5208	Individual	3		11	C	03/01-02/28	132	612	720	2,920	
5212	Individual	3		1	C	03/01-10/31	13		40		
5215	Hill	3		5	C	03/01-02/28	60		480		
5219	Individual	3		10	S	03/01-02/28	24		200		
5222	Keyser Creek Co.	15		2	C	03/01-02/28	16		80		
5223	Individual	3		1	C	03/01-02/28	12	43	200	480	
5228	Individual	3		5	C	05/01-10/31	30	6	240	160	
5231	Individual	3		17	S	03/01-02/22	40		160		
5306	Kinmonth	3		12	C	03/01-02/28	148				
	Kinmonth			7	C	06/01-09/30	28	95	1,440	640	
5309	Individual	3		12	C	03/01-02/28	144		720		
5310	Keller Common	3		1	C	03/01-10/31	8				
	Keller Common			35	C	03/01-02/28	420		580		
5324	Kemmel Ind.	3		2	C	03/01-02/28	15		80		
5329	Individual	3		2	C	03/01-02/28	16		160		
5330	Bull Mountain Ind.	3		2	C	03/01-02/28	24		184		

APPENDIX 1.8: SUMMARY OF ALLOTMENTS BY CATEGORY (Continued, Page 5)

"C" Category

Number	Allotment Name	Preference Code	Management Status	Livestock		Season of Use	AUMs		Acres		Range Condition % Good and Excellent
				No.	Class		BLM	Other	BLM	Other	
5335	Sando Ind.	3		3	C	03/01-02/28	36			320	
5347	Van Driest Ind.	3		6	C	03/01-02/28	72			320	
5349	Wegner Ind.	3		2	C	03/01-02/28	16			136	
5353	Rudi Spring	3		15	C	03/01-02/28	177			1,258	
5354	Ballek Ind.	3		2	C	03/01-02/28	21			40	
5357	Cossitt Ind.	3		8	C	03/01-03/31	8			37	
5359	Individual	3		2	C	03/01-02/28	24			125	
5364	Bellas Pasture	3		1	C	03/01-02/28	14			80	
5374	Individual	3		1	C	03/01-09/30	7			40	
5376	Individual	3		8	C	04/01-11/30		E/U		360	
5403	Harold Arthur	15		2	C	03/01-02/28	17			80	
5404	Harry Arthur	15		1	C	03/01-02/28	10			40	
5405	Daniel Arthur	15		2	C	03/01-02/28	30			132	
5407	Bainler Ind.	15		3	C	06/01-10/15	12			80	
5408	Arthur Beley	15		1	C	03/01-02/28	9			38	
5409	Cremer Rodeo Land	15		19	C	03/01-02/28	222			1,152	
5414	Boe Ranch Co.	15		7	C	03/01-02/28	75			388	
5416	L & I Braughton	15		2	C	03/01-02/28	23			80	
5417	A.C. Brumfield	15		2	C	03/01-02/28	16			80	
5418	Herbert Bue	15		2	C	03/01-02/28	22			120	
5419	Donald Todd	15		2	C	03/01-02/28	24			120	
5424	Gerald Connolly	15		1	C	03/01-02/28	12			78	
5426	Beartooth Hereford	15		2	C	03/01-02/28	15			97	
5427	Frank Cosgriff	15		2	C	03/01-02/28	24			119	
5432	Arnold Dinsdale	15		1	C	03/01-02/28	10			40	
5434	Marlyn Drange	15		5	C	03/01-02/28	50			160	
5435	David Duffy	15		2	C	03/01-02/28	15			80	
5437	T.M. Burkholder	15		5	C	03/01-02/28	60			308	
5438	Ellison Ind.	15		2	C	03/01-02/28	13			40	
5439	Engle Ranch Inc.	15		2	C	03/01-02/28	24			360	
5440	Paul Raymond Esp.	15		1	C	03/01-02/28	10			60	
5441	W. & H.M. Ewan	15		1	C	03/01-02/28	8			40	
5444	June Kalberg	15		3	C	03/01-02/28	29			120	
5446	Thomas Flanagan	15		1	C	03/01-02/28	8			40	
5449	Sidney Frazer	15		1	C	03/01-02/28	10			40	
5451	Glenn Golden	15		6	C	03/01-02/28	62			414	
5454	Grewell	15		5	C	03/01-02/28	60			440	
5455	J.B. Grierson Co.	15		10	C	03/01-02/28	120			640	
5456	J.B. Grierson Co.	15		12	C	03/01-02/01	134			719	
5457	Lewis Grosfield	15		6	C	03/01-02/28	71			280	
5458	E. Gullicksen Est.	15		3	C	03/01-02/28	30			120	
5459	Hallstone Ranch	15		2	C	03/01-02/28	16			81	
5460	Hay Meadow Ranches	15		1	C	03/01-02/28	17			80	
5461	Cedar Creek	15		3	C	03/01-02/28	25			480	
5463	Hathaway	15		1	C	03/01-02/28	12			80	
5466	Paul E. Hedrick	15		6	C	03/01-02/28	72			826	
5467	Curtin Ind.	15		2	H	03/01-02/28	14			40	
5468	Fred Horst	15		1	C	03/01-02/28	10			40	
5470	Norris Johnson	15		3	C	03/01-02/28	36			160	
5471	Lyle Jones	15		10	C	03/01-02/28	120			674	
5473	Leo & Vernie Kamp	15		1	C	03/01-02/28	8			40	
5474	H.A. & B.C. Keebler	15		14	C	03/01-02/28	163			533	
5476	Vernon Keller	15		2	C	03/01-02/28	20			160	
5477	Keewaydin Ranch	15		10	C	03/01-02/28	114			640	
5478	Gerald Kirch	15		2	C	03/01-02/28	15			40	
5480	John Krivtz	15		1	C	03/01-02/28	5			40	
5481	Henry Krug	15		1	C	03/01-02/28	8			40	
5483	James Cary	15		1	C	03/01-02/28	8			59	
5484	William Langford	15		2	C	03/01-02/28	18			54	
5485	Holden Individual	15		2	C	03/01-02/28	29			160	
5486	Cain Ranch	15		1	C	03/01-02/28	9			40	
5488	Line Inc.	15		6	C	03/01-02/28	70			481	
5490	Harry & Alice Line	15		10	C	03/01-02/28	103			567	
5491	Joseph Ortiz	15		1	C	03/01-02/28	8			40	
5492	C.L. Marshall Ind.	15		23	C	03/01-02/28	266			1,197	
5495	Ray Mickels	15		5	C	03/01-02/28	60			360	
5498	Meigs/Hash	15		2	C	03/01-02/28	24			240	
5500	Kathryn M. Morgan	15		2	C	03/01-02/28	18			81	
5501	Montroy Ranch Ind.	15		1	H	03/01-02/28	14			560	
5502	Douglas Mothershead	15		2	C	03/01-02/28	22			160	
5503	Glen Mothershead	15		5	C	03/01-02/28	59			330	
5504	T.P. Mulvihill	15		1	C	03/01-02/28	8			87	
5506	Terland Ind.	15		1	C	03/01-02/28	3			40	
5508	Milligan Creek	15		1	C	03/01-02/28	7			40	
5509	Gustov Norman	15		1	C	03/01-02/28	8			80	
5510	Alfred E. Ostrom	15		3	C	03/01-02/28	35			160	
5511	Hubert Ostrom	15		2	C	03/01-02/28	27			80	
5512	Jacob Ostrom	15		2	C	03/01-02/28	17			80	
5513	Robert Ostrom	15		3	C	03/01-02/28	32			160	

APPENDIX 1.8: SUMMARY OF ALLOTMENTS BY CATEGORY (Continued, Page 6)

"C" Category

Number	Allotment Name	Preference Code	Management Status	Livestock		Season of Use	AUMs		Acres		Range Condition % Good and Excellent
				No.	Class		BLM	Other	BLM	Other	
5515	Pearlie Lee & Co.	15		2	C	03/01-02/28	20		80		
5516	Pederson Land & Livestock	15		11	C	03/01-02/28	123		754		
5517	Southland Estates	15		15	C	03/01-02/28	180		1,040		
5520	Pierce Ranches Inc.	15		10	C	03/01-02/28	120		607		
5522	Clarence & A. Pile	15		14	C	03/01-02/28	165		1,003		
5523	D. & B. Pipkin	15		8	C	03/01-02/28	88		480		
5524	Plaggemeyer Ind.	15		3	C	03/01-02/28	34		160		
5525	W. & R. Plaggemeyer	15		1	C	03/01-02/28	9		40		
5528	Helen H. Reed	15		1	C	03/01-02/28	6		40		
5533	Clarence S. Rostad	15		3	C	03/01-02/28	28		72		
5534	Peter Rostad	15		5	C	03/01-02/28	58		360		
5535	Bruce Robinson	15		1	C	03/01-02/28	8		40		
5537	Ronald H. Sannes	15		1	C	03/01-02/28	7		40		
5540	J.K. & A. Scholten	15		1	C	03/01-02/28	13		40		
5541	7 L Bar Ranch Co.	15		2	C	03/01-02/28	20		160		
5542	Ray W. Severin	15		1	C	03/01-02/28	3		15		
5543	Smoot Ind.	15		11	C	03/01-02/28	128		345		
5544	Alfred G. Spaeth	15		2	C	03/01-02/28	20		160		
5545	O.S. & G.K. Stenberg	15		18	C	03/01-02/28	315		685		
5546	Joe Stene	15		2	C	03/01-02/28	16		80		
5548	G.A. Sternal	15		5	C	03/01-02/28	59		240		
5549	Jim Edwards	15		2	C	03/01-02/28	19		120		
5550	T. & F. Strobel	15		4	C	03/01-02/28	44		280		
5552	Telmar & A. Terland	15		13	C	03/01-02/28	149		662		
5553	Mitchell Thomas	15		1	C	03/01-02/28	20		79		
5554	Chris Thompson	15		1	C	03/01-02/28	7		40		
5555	Two River Ranch	15		6	C	03/01-02/28	66		306		
5556	Bernard J. Van Every	15		1	C	03/01-12/31	10		120		
5557	Barney A. Warp	15		2	C	03/01-02/28	14		240		
5558	Gerald Weast	15		6	C	03/01-02/28	62		320		
5559	Weppler Ranch Co.	15		2	C	03/01-02/28	19		141		
5560	Bruce Whithorn	15		2	C	03/01-02/28	24		120		
5561	A.E. Wilkens	15		2	C	03/01-02/28	16		200		
5562	Hubert-Woodard	15		4	C	03/01-02/28	46		240		
5566	Individual	3		1	C	03/01-02/28	8		40		
5567	Individual	3		5	C	03/01-07/31	24		40		
5568	Individual	3		1	C	05/15-09/15	5		40		
5569	Individual	3		2	C	03/01-02/28	24		80		
5570	Agnes O'Leary	15		1	C	03/01-02/28	8		40		
5571	Individual	3		1	C	03/01-12/31	10		80		
5572	Individual	3		8	C	03/01-02/28	97		640		
5573	Individual	3		3	C	03/01-02/28	36		110		
5580	Robert-Lee Olsen	15		20	S	03/01-02/28	39		280		
5581	Big Canyon	15		2	C	03/01-02/28	26		160		
5582	Keebler	15		1	C	03/01-02/28	10		40		
5585	W.J. Thompson	15		33	C	08/15-09/30	50		480		
5586	Richard Worm	15		1	C	03/01-02/28	8		40		
9650	American Fork Ind.	15		2	C	03/01-02/28	27		80		
9652	Anderson Ind.	15		1	C	03/01-02/28	14		40		
9667	Broderson	15		2	C	03/01-02/28	26		160		
9678	Casey	15		3	C	03/01-02/28	35		205		
9680	Charter Ranch Inc.	15		5	C	03/01-02/28	64		320		
9686	Cremer Ind.	15		1	C	03/01-02/28	6		40		
9694	Schenk Ind.	15		5	C	03/01-02/28	42		120		
9696	Vander Voort Ind.	15		2	C	03/01-02/28	30		117		
9702	Eliasson Ranch Co.	15		4	C	03/01-02/28	54		240		
9716	Gebhardt	15		4	C	03/01-02/28	52		320		
9734	Pelan Ind.	15		5	C	03/01-02/28	64		213		
9736	Hougardy Ind.	15		1	C	03/01-02/28	21		80		
9757	Shelhammer	15		13	C	03/01-02/28	166		1,199		
9762	Lode Ind.	15		5	C	03/01-02/28	64		240		
9765	Lyons	15		10	C	05/20-09/30	44		200		
9768	Mager Ind.	15		3	C	07/10-09/15	8		40		
9773	McCoughy Ind.	15		2	C	03/01-02/28	24		160		
9781	Muir Ind.	15		3	C	03/01-02/28	38		162		
9792	W. Olsen Ind.	15		1	C	03/01-02/28	10		38		
9805	Robertson Ind.	15		5	C	03/01-02/28	64		160		
9837	Mario Todaro	15		1	C	03/01-02/28	18		80		
9840	Tully Ind.	15		1	C	03/01-02/28	15		49		
0842	Vale Ind.	15		3	C	03/01-02/28	36		160		
0843	Van Driest Ind.	15		4	C	03/01-02/28	49		401		
0844	Akeis Ind.	15		9	C	03/01-02/28	54		240		
0845	McCann Ind.	15		9	C	03/01-02/28	102		320		
0850	Carey Gulch	15	USFS AWP		C	as per AWP	2		145		

Sources:

1. Range Management Automated System, BLM, 1982
2. Ecological Site Inventory, BLM, 1981

APPENDIX 1.9: APPLICATION OF UNSUITABILITY CRITERIA

Criterion #1: There are no deposits of federal coal which lie within the Federal Land Systems described in 43 CFR 3461.1(a)(1) (100% reliability).

Criterion #2: There is no federally-owned surface encumbered by rights-of-way or easements within the strippable coal area (100% reliability).

Criterion #3: Several miles of county maintained roads cross federal lands. These rights-of-way and the appropriate buffer zones are considered unsuitable; no exceptions were applied. Several occupied dwellings lie on federal land. These dwellings and appropriate buffer zones are considered unsuitable; no exceptions were applied (100% reliability).

Criterion #4: There are no deposits of strippable federal coal which lie within designated wilderness study areas (100% reliability).

Criterion #5: There are no federal lands within the coal field which have been designated by Visual Resource Management analysis as being Class I (100% reliability).

Criterion #6: There are no federal lands within the coal field which have been permitted for use for scientific study (100% reliability).

Criterion #7: Due to lack of adequate inventory, this criterion has not been applied (inadequate data).

Criterion #8: There are no designated or potential National Natural Landmarks within the coal field (100% reliability).

Criteria #9 - #15: Due to the lack of adequate inventory, these criteria were not applied.

Criterion #16: The USGS has identified several drainages which flow through federal lands, portions of which qualify as special floodplains. These areas are considered unsuitable; no exceptions were applied (100% reliability).

Criterion #17: There are no federal lands which have been committed for use as municipal watersheds (100% reliability).

Criterion #18: There are no National Resource Waters within the coal field (100% reliability).

Criterion #19: The BLM has identified several miles of preliminary Alluvial Valley Floors. These areas are identified on Figure 3. These areas will not be considered unsuitable until a final determination is made by the Office of Surface Management and the State of Montana (date preliminary).

Criterion #20: No state proposed criteria have been developed and adopted by the Secretary.

Unsuitability criteria were only applied to federal lands within the Bull Mountain Field. Federal coal in other fields may only be developed through underground mining methods. The criteria will only be applied in these fields after receipt of a mining plan application which details the location of proposed surface operations and facilities.

APPENDIX 1.10: METHODOLOGY FOR MITIGATING IMPACTS TO CULTURAL RESOURCES

The BLM recognizes that some of the proposals in various programs could affect cultural resources. Because of this fact, the BLM conducts intensive field (Class III) inventories of specific areas that could be impacted prior to an undertaking. If cultural resources are found, every effort is made to avoid them. However, where this is not possible, BLM consults with the SHPO and the Advisory Council on Historic Preservation (ACHP) in accordance with the National Historic Preservation Act 1966, as amended 1980, and attendant 36 CFR 60 and 36 CFR 800 Regulations.

Mitigation of impacts to cultural resources may entail building removal, fencing off, burying as a form of preservation, or excavation. The costs of these measures could range from approximately \$2,000 per site to as much as \$100,000 for a large and complex buried prehistoric site. Sites requiring extensive study would probably cause a project to cost too much in relation to the benefits it might bring. In effect, the impacts would be eliminated by deleting the project. Perhaps 95% of these sites would not have mitigation costs above \$10,000 per site, however.

Methodology for Implementing Off-Road Vehicle Restrictions

Off-road vehicle closures will be accomplished in accordance with BLM Manual 8340 - Off-Road Vehicle Management. This manual is on file in the Billings Resource Area Office.

Methodology Used to Determine Impacts to Visual Resources

Impacts to visual quality are determined through analysis of allowable management actions within the five visual management classes as they are defined in Bureau Manual 8400. Projects are analyzed in terms of their potential to create the following types of effects:

- A. Ground disturbance, including roads and trails constructed for access and/or maintenance of the project.
- B. Creation of structures not homogenous to the visual scene.
- C. Color changes which may occur from vegetative manipulations. This could be either removal of native vegetation or the introduction of additional non-native vegetation.
- D. Livestock concentration around reservoirs and other water sources and associated grazing impacts of compaction, trailing and erosion.
- E. Grazing systems and the associated fence and the fencing contracts.

Each type of impact is evaluated as to whether or not it would create a high, moderate or low contrast if it were done in each one of the four visual class landscapes. High contrasts would be created by those landscape changes that demand attention. They could not be overlooked. The contrast would be inharmonious to the basic scenery elements of line, form, color and texture. High contrast projects could not meet management class objectives without mitigation.

Moderate contrasts would attract attention and dominate the landscape. A project that would create a moderate contrast could only meet Class III and IV management objectives without mitigation.

Low contrasts might or might not dominate the scene, but because of the quality of the scenery or the size and scope of the project, it would meet all of the management class objectives.

This analysis assumes that the projects would be viewed from the foreground (up to one mile). The impacts to visual class would be rated at the time of the projects if no special mitigating measures are applied. Over time, nature might mitigate the impacts through revegetation. Also, standard operating procedures would allow many projects to be accomplished within allowable visual class guidelines.

Source: BLM, 1982

APPENDIX 2.1: COST CALCULATIONS OF RANGE IMPROVEMENTS AND VEGETATION MANIPULATIONS

Figures are based on average cost of similar project or treatment for this region.

Project or Method	Average Cost	Continuation of Existing Management	Low Level Management Alternative	High Level Management Alternative	Preferred Level Management Alternative
		# of Units Total Cost	# of Units Total Cost	# of Units Total Cost	# of Units Total Cost
Reservoir	\$ 6,000 ea.	4 \$ 24,000	- \$ 0	16 \$ 96,000	16 \$ 96,000
Well	7,000 ea.	9 63,000	- 0	10 70,000	10 70,000
Fence	2,000 mi.	13 26,000	- 0	46 92,000	46 92,000
Spring	2,500 ea.	-	- 0	2 5,000	2 5,000
Pipeline	1,500 mi.	21 31,500	- 0	31 46,500	31 46,500
*Catchment	8,500 ea.	19 161,500	- 0	47 399,500	47 399,500
Leafy Spurge Control		45 15,000	- 0	45 15,000	45 15,000
Sagebrush Burning	5 ac.	- 0	- 0	21,520 107,600	21,520 107,600
Disc and Chisel	20 ac.	- 0	- 0	1,700 34,000	1,700 34,000
Renovate Crested Wheat	25 ac.	-	-	5,205 130,125	5,205 130,125
Total Cost		\$321,000	\$0	\$995,725	\$995,725

* Current cost of catchments is about \$15,000. The \$8,500 figure is used because that is the estimated cost with improved design. If the larger figure is used this would add \$123,500 to Alternative A and \$305,500 to Alternatives C and D.

APPENDIX 2.1: COST CALCULATIONS OF RANGE IMPROVEMENTS AND VEGETATION MANIPULATIONS (Continued, Page 2)

Cost Calculations of Range Improvements Within the PMWHR

Project or Method	Average Cost	Continuation of Existing Management		Low Level Management Alternative		High Level Management Alternative		Preferred Level Management Alternative	
		# of Units	Total Cost	# of Units	Total Cost	# of Units	Total Cost	# of Units	Total Cost
Water Catchments	\$ 8,500 ea.	5	\$ 42,500	0	\$ 0	7-8	\$ 59,500-68,000	5	\$ 42,500
Fence/line	2,000 mi.	7	14,000	0	0	15-19 (mi.)	30,000-38,000	7	14,000
Total Cost			\$ 56,500		\$ 0		\$ 89,500-\$106,000		\$ 56,500

Source: BLM, 1982

APPENDIX 2.2: COST CALCULATIONS OF WILDLIFE HABITAT IMPROVEMENTS

Project or Method	Average Cost	Continuation of Existing Management		Low Level Management Alternative		High Level Management Alternative		Preferred Level Management Alternative	
		Units	Total Cost	Units	Total Cost	Units	Total Cost	Units	Total Cost
Water Catchment (guzzler)	\$ 1,800/ea	12	\$21,600	0	0	20	\$ 36,000	5	\$ 9,000
Island	500/ea	20	10,000	0	0	50	25,000	50	25,000
Raptor Nest Structure	50/ea	0	0	0	0	20	1,000	20	1,000
Fence a Reservoir	1,000/ea	7	7,000	0	0	7	7,000	7	7,000
Fence a Riparian Area (5 acres)	250	2	500	0	0	0	0	0	0
Seed 25 acres	500/ea	0	0	0	0	1	500	1	500
New Fish Reservoir	10,000/ea	0	0	0	0	3	30,000	3	30,000
Alternative Watering devices (i.e. tanks and pipelines below reservoirs)	1,000/ea	3	3,000	0	0	3	3,000	3	3,000
Totals			42,100				102,500		75,500

Source: BLM, 1982

APPENDIX 2.3: SURFACE COAL MINE SCENARIO

For analysis purposes, it is anticipated that in mid-1982 a 300,000 ton per year surface mine would be opened in the Mammoth-Rehder coal bed of the Bull Mountain Coal Field.

It is estimated that the mine would not reach its full production level until its fourth year of operation, 1995. During the first year and one-half, support facilities, access roads, and perhaps a rail spur would be constructed, disturbing approximately 60 acres. By 1994 the surface facilities will have been completed, and mining would begin. Approximately 11 acres will be disturbed to produce 150,000 tons of coal. In 1995 the mine will be at its full production level, 300,000 tons per year. Around 21 acres would be disturbed. This level of mining would continue throughout the life of the mine.

Reclamation of disturbed areas would begin as soon after mining as practicable, and continue in conjunction with the mining operation. The operator's bond would not be released until the land was satisfactorily reclaimed, probably 15 years after mining.

UNDERGROUND COAL MINE SCENARIO

It is anticipated that a small underground mine would be opened in the Joliet-Fromberg Field in 1985. Associated surface facilities would be constructed during the next two years disturbing perhaps 60 acres. By 1987, the mine will have begun production, at an estimated 30,000 tons that first year. In 1988, the mine will reach its full production level of 150,000 tons per year, which will be maintained throughout the life of the mine. Only small acreages will be disturbed during this period.

It is assumed that the produced coal would serve both domestic purposes and be used in coal-fired electricity generation.

APPENDIX 2.4: APPLICATION OF UNSUITABILITY CRITERIA BULL MOUNTAIN
COAL FIELD (20:1 Stripping Ratio)

<u>Unsuitability Criterion</u>	<u>Acres Unsuitable</u>	<u>Tonnage (1)</u>
#1 (See Appendix 1.4 for descriptions)	N/A	0
#2	N/A	0
#3	0 miles of road; 3 buildings; 24 acres	350,000
#4	N/A	0
#5	N/A	0
#6	N/A	0
#7	(2)	
#8	N/A	0
#9	(2)	
#10	(2)	
#11	(2)	
#12	(2)	
#13	(2)	
#14	(2)	
#15	(2)	
#16	2-1/2 miles: 96 acres	1,500,000
#17	N/A	0
#18	N/A	0
#19	5 miles: 298 acres	0 (3)
#20	N/A	0
Totals	120 acres	1,850,000 tons

Footnotes:

- (1) Assume 11' of coal for Mammoth-Rehder; 8' of coal McCleary bed; 1,711 tons/acre foot.
- (2) Criteria which have not been applied due to lack of available inventory.
- (3) Final determination on Alluvial Valley Floors by State of Montana and Office of Surface Management not completed; no coal eliminated.

APPENDIX 2.5: APPLICATION OF COAL UNSUITABILITY CRITERIA
(10:1 Stripping Ratio)

(1)	<u>Acres Unsuitable</u>	<u>Tonnage</u>
Criterion #1	N/A	0
#2	N/A	0
#3	2 occupied dwellings; 16 acres	240,000
#4	N/A	0
#5	N/A	0
#6	N/A	0
#7	(2)	
#8	N/A	0
#9	(2)	
#10	(2)	
#11	(2)	
#12	(2)	
#13	(2)	
#14	(2)	
#15	(2)	
#16	1.2 miles: 50 acres	750,000
#17	N/A	0
#18	N/A	0
#19	1.2 miles: 180 acres	0 (3)
#20	N/A	0
<hr/>		
Totals	17 acres	1,000,000 tons

Footnotes:

- (1) Assume 11' of coal for Mammoth-Rehder; 8' of coal McCleary bed; 1,711 tons/acre foot.
- (2) Criteria which have not been applied due to lack of available inventory.
- (3) Final determination on Alluvial Valley Floors by State of Montana and Office of Surface Management not completed; no coal eliminated.

APPENDIX 2.6: AREAS SENSITIVE TO OIL AND GAS LEASING

#	AREA	LAND DESCRIPTION (TO SECTION ONLY)	RATIONALE
1	Steamboat Butte	T. 6 N., R. 29 E., Sec. 4-5, 7-9	Archeological Site Complex (ASC)
2	Shepherd Ah-Nei	T. 3 N., R. 28 E., Sec. 6 T. 4 N., R. 27 E., Sec. 24,25,36 T. 4 N., R. 28 E., Sec. 19,20,30,31	Recreation Site Environmental Education Site
3	Acton Area	T. 3 N., R. 25 E., Sec. 5-8,17,20	Recreation Site
4	Young's Point	T. 2 S., R. 22 E., Sec. 35 T. 3 S., R. 22 E., Sec. 3,4,5,8-10	Visual Resources Wildlife Habitat Cultural Resources
5	Bad Canyon	T. 4 S., R. 16 E., Sec. 4,6-10,14,15	Recreation Site Wildlife Habitat
6	Pryor Mountain Wild Horse Range	T. 8 S., R. 28 E. Sec. 4-9, 17-21 28-33 T. 9 S., R. 27 E. Sec. 1,2,11-14,23-25 T. 9 S., R. 28 E. Sec. 4-10,15-22,27-34 T. 58 N., R. 95 W. Sec. 19-23,26-29,33,34 (Wyoming)	Wilderness Wild Horses Wildlife Habitat Fragile Soils Recreation Sites Visual Resources
7	Crooked Creek Natural Area	T. 58 N., R. 95 W., Sec. 28 (within PMWHR)	Paleontologic Site National Natural Landmark (NNL)
8	Asparagus Point	T. 8 N., R. 27 E., Sec. 2	Recreation Site
9	Beartooth Face	BLM managed oil and gas estate within two miles of Beartooth Mountains	Visual Resources Seasonal Wildlife Habitat
10	Yellowstone River Area	Federally managed oil and gas estate within two miles of the river	Flowing Stream Wildlife Habitat Visual Resources
11	Weatherman's Draw	T. 8 S., R. 24 E., Sec. 20,28,29	Archeological Site Complex (ASC)
12	Bridger Fossil Area	T. 7 S., R. 24 E., Sec. 17	Paleontologic Site National Natural Landmark
13	Red Dome	T. 7 S., R. 24 E., Sec. 19-21	Potential National Natural Landmark
14	Petroglyph Canyon	T. 9 S., R. 26 E., Sec. 35	Archeological Site Complex (ASC)
15	Red Valley	T. 9 S., R. 27 E., Sec. 21,28	Potential National Natural Landmark
16	Castle Butte	T. 5 N., R. 30 E., Sec. 34,35	Archeological Site Complex (ASC)

APPENDIX 2.7: LAND TENURE PROPOSAL TRACTS

Yellowstone County

Tract Number ^{1/}	Legal Description ^{2/}	Acres
31R	T. 1 N., R. 27 E. Sec. 8: Lots 3, 4	42.50
32R	T. 1 N., R. 27 E. Sec. 8: Lot 6	18.34
* 58R	T. 2 N., R. 26 E. Sec. 3: S1/2 Sec. 10: NE1/4	320 160 480
* 59R	T. 2 N., R. 26 E. Sec. 8: NE1/4	160
* 60R	T. 2 N., R. 26 E. Sec. 8: SW1/4	160
65D 65Fa ^{3/}	T. 2 N., R. 26 E. Sec. 14: N1/2NE1/4	80
62D 62Fa	T. 3 N., R. 25 E. Sec. 26: NE1/4, E1/2SW1/4, N1/2SE1/4	320
33R	T. 3 N., R. 26 E. Sec. 4: All Sec. 8: W1/2, SE1/4 Sec. 9: All Sec. 10: W1/2	640 480 640 320 2,080
* 61R	T. 3 N., R. 26 E. Sec. 32: S1/2SE1/4	80
4D	T. 3 N., R. 27 E. Sec. 4: SW1/4	160
5D 5Ra	T. 3 N., R. 27 E. Sec. 14: NE1/4	160
6D 6Ra	T. 3 N., R. 27 E. Sec. 14: SW1/4	160
7D	T. 3 N., R. 27 E. Sec. 18: E1/2	320
8D	T. 3 N., R. 27 E. Sec. 24: S1/2SE1/4	80
* 62R	T. 3 N., R. 28 E. Sec. 2: E1/2NE1/4, NW1/4NE1/4, NE1/4NW1/4, SE1/4SW1/4, NE1/4SE1/4, S1/2SE1/4	120
* 63R	T. 3 N., R. 28 E. Sec. 4: NE1/4NE1/4	40
* 64R	T. 3 N., R. 28 E. Sec. 4: NW1/4NW1/4	40
* 65R	T. 3 N., R. 28 E. Sec. 10: N1/2	320
34R	T. 3 N., R. 28 E. Sec. 12: All T. 4 N., R. 28 E. Sec. 25: All T. 4 N., R. 29 E. Sec. 30: W1/2 Sec. 31: All T. 3 N., R. 29 E. Sec. 6: E1/2, NW1/4, N1/2SW1/4, SE1/4SW1/4 Sec. 7: All Sec. 18: All	640 640 320 640 600 640 640 4,120
* 66R	T. 3 N., R. 28 E. Sec. 14: SW1/4SW1/4	40
* 67R	T. 3 N., R. 28 E. Sec. 22: NE1/4	3.44

^{1/}The letters following the tract numbers designate whether the tracts are in the disposal (D), retention (R), or further study (F) category.

^{2/}Legal descriptions are arranged numerically by township, with north townships listed first, followed by south townships.

^{3/}The letter "a" denotes those tracts that were changed to a different land tenure category following public comment.

*Tracts in the retention category identified as suitable for exchange.

APPENDIX 2.7: LAND TENURE PROPOSAL TRACTS (Continued, Page 2)

Yellowstone County

Tract Number ^{1/}	Legal Description ^{2/}	Acres
35R	T. 3 N., R. 28 E. Sec. 24: Lot 5 (NE1/4NE1/4)	40.21
1F	T. 3 N., R. 28 E. Sec. 26: Lot 5	1.59
66D	T. 3 N., R. 29 E. Sec. 2: SW1/4SW1/4	40
2F	T. 3 N., R. 29 E. Sec. 20: Lot 5	3.44
36R	T. 3 N., R. 29 E. Sec. 22: Lots 5, 6, 7, & 8	68.72
37R	T. 3 N., R. 29 E. Sec. 24: Lots 5 & 6	4.45
38R	T. 3 N., R. 30 E. Sec. 1: All Sec. 2: S1/2 Sec. 12: N1/2	640 320 320 <u>1,280</u>
3F 3Ra	T. 3 N., R. 30 E. Sec. 4: S1/2	320
4F 4Ra	T. 3 N., R. 30 E. Sec. 10: N1/2	320
39R	T. 3 N., R. 30 E. Sec. 22: Lots 5, 6, 7, & 8	56.95
40R	T. 3 N., R. 31 E. Sec. 4: Lot 21	9.93
41R	T. 4 N., R. 25 E. Sec. 31: E1/2 T. 3 N., R. 25 E. Sec. 5: All Sec. 6: NE1/4 Sec. 7: Lots 1 & 2, NE1/4, E1/2W1/2, SE1/4 Sec. 8: All Sec. 9: All Sec. 17: All Sec. 20: N1/2N1/2	320 640 160 548.70 640 640 640 160 <u>3,748.70</u>
42R	T. 4 N., R. 27 E. Sec. 24: NE1/4, S1/2 Sec. 25: All Sec. 36: All T. 4 N., R. 28 E. Sec. 19: All Sec. 20: W1/2 Sec. 30: Lots 1 & 2, N1/2NE1/4 Sec. 31: All T. 3 N., R. 28 E. Sec. 6: Lots 3, 4, 7, 8, 9, 10, 11, & 12, E1/2	480 640 640 640 640 320 150.19 640 <u>572.88</u> <u>4,083.07</u>
* 69R	T. 4 N., R. 28 E. Sec. 26: W1/2	320
* 70R	T. 4 N., R. 28 E. Sec. 34: E1/2	320
67D	T. 4 N., R. 29 E. Sec. 24: W1/2	320
69D 69Fa	T. 4 N., R. 29 E. Sec. 28: S1/2	320
70D 70Fa	T. 4 N., R. 29 E. Sec. 34: SW1/4NE1/4, W1/2SW1/4, SE1/4SW1/4, SE1/4	320
5F	T. 4 N., R. 30 E. Sec. 19: All	640
43R	T. 4 N., R. 31 E. Sec. 24: W1/2	320

APPENDIX 2.7: LAND TENURE PROPOSAL TRACTS (Continued, Page 3)

Yellowstone County

Tract Number ^{1/}	Legal Description ^{2/}	Acres
* 71R	T. 4 N., R. 31 E. Sec. 24: NE1/4NE1/4	40
* 72R	T. 4 N., R. 31 E. Sec. 24: E1/2SE1/4	80
44R	T. 4 N., R. 31 E. Sec. 26: All Sec. 34: S1/2 Sec. 35: All	640 320 640 <u>1,600</u>
45R	T. 4 N., R. 32 E. Sec. 12: E1/2 T. 4 N., R. 33 E. Sec. 7: Lots 6, 7, 8, 9, & 10	320 <u>192.28</u> 512.28
20D 20Fa	T. 4 N., R. 32 E. Sec. 22: N1/2NW1/4, SW1/4NW1/4, W1/2SW1/4	200
* 73R	T. 4 N., R. 32 E. Sec. 30: Lots 1, 2, 3, & 4	141.96
46R	T. 4 N., R. 32 E. Sec. 32: Lots 6, 7, & 8	59.44
47R	T. 4 N., R. 32 E. Sec. 32: Lots 15, 16, & 17	73.74
48R	T. 4 N., R. 33 E. Sec. 7: Lot 11	39.16
21D	T. 5 N., R. 33 E. Sec. 26: S1/2SE1/4	80
* 74R	T. 5 N., R. 33 E. Sec. 32: SW1/4NW1/4, N1/2SW1/4, SE1/4SW1/4	160
49R	T. 5 N., R. 33 E. Sec. 27: All Sec. 28: N1/2 Sec. 33: Lots 1, 2, & 3, N1/2, N1/2SW1/4, SW1/4SW1/4, NW1/4SE1/4 Sec. 34: Lots 1, 2, 3, & 4, NW1/4NE1/4, N1/2NW1/4	640 320 565.53 301.92 <u>1,827.45</u>
50R	T. 5 N., R. 33 E. Sec. 34: Lot 5	23.80
51R	T. 5 N., R. 34 E. Sec. 28: Lots 1, 2, 3, & 4	52.34
52R	T. 5 N., R. 34 E. Sec. 28: Lots 12, 13, 14, 15, 16, 17, & 18 Sec. 29: Lots 9 & 10	209.32 39.57 <u>248.89</u>
23D 23Ra	T. 5 N., R. 34 E. Sec. 30: N1/2N1/2	160
6F	T. 1 S., R. 25 E. Sec. 25: Lot 3	10.10
53R	T. 1 S., R. 25 E. Sec. 34: Lot 4	20.27
54R	T. 1 S., R. 26 E. Sec. 14: Lot 3, SE1/4NW1/4, E1/2SW1/4, S1/2SE1/4 Sec. 23: N1/2NE1/4, NE1/4NW1/4 Sec. 24: W1/2W1/2 Sec. 25: NW1/4NW1/4 Sec. 26: E1/2NE1/4	242.27 120 160 40 80 <u>642.27</u>
55R	T. 1 S., R. 26 E. Sec. 21: E1/2NE1/4, SW1/4NE1/4, SE1/4NW1/4 Sec. 22: SW1/4NE1/4, NW1/4, N1/2S1/2 Sec. 23: NW1/4SW1/4	160 360 40 560
7F	T. 1 S., R. 26 E. Sec. 30: Lot 10, SW1/4SE1/4 Sec. 31: NW1/4NE1/4	80 40 <u>120</u>

APPENDIX 2.7: LAND TENURE PROPOSAL TRACTS (Continued, Page 4)

Yellowstone County		
Tract Number ^{1/}	Legal Description ^{2/}	Acres
9D	T. 1 S., R. 27 E. Sec. 30: SE1/4SW1/4	40
56R*	T. 2 S., R. 24 E. Sec. 13: Lots 10 & 11 Sec. 14: Lot 7 Sec. 23: Lot 13	66.17 .58 2.35 <u>69.10</u>
57R	T. 2 S., R. 24 E. Sec. 22: Lot 7 Sec. 23: Lot 9	2.58 7.04 <u>9.62</u>
1D	T. 2 S., R. 25 E. Sec. 18: Lot 12	40
Sweet Grass County		
Tract Number ^{1/}	Legal Description ^{2/}	Acres
4R	T. 1 N., R. 13 E. Sec. 24: Lots 1 & 2	70.83
5R	T. 1 N., R. 13 E. Sec. 25: Lot 5	7.86
6R	T. 1 N., R. 14 E. Sec. 12: Lot 13	6.63
7R	T. 1 N., R. 14 E. Sec. 19: Lots 10 & 11 Sec. 30: Lot 5 T. 1 N., R. 13 E. Sec. 24: Lot 3 Sec. 25: Lot 9	63.01 6.63 4.54 2.98 <u>77.16</u>
8R	T. 1 N., R. 15 E. Sec. 17: Lot 3	12.69
9R	T. 1 N., R. 15 E. Sec. 21: Lot 4 Sec. 22: Lot 5	.56 5.80 <u>6.36</u>
30D	T. 1 N., R. 15 E. Sec. 33: SE1/4SE1/4	40
24D	T. 1 S., R. 12 E. Sec. 24: NE1/4NW1/4, S1/2NW1/4, N1/2SW1/4, SW1/4SW1/4	240
25D	T. 1 S., R. 13 E. Sec. 18: SE1/4SW1/4	40
10F	T. 1 S., R. 14 E. Sec. 3: Lot 8	7.01
26D	T. 1 S., R. 14 E. Sec. 6: Lot 7, SE1/4SW1/4	73.74
27D	T. 1 S., R. 14 E. Sec. 6: SE1/4NW1/4	40
28D	T. 1 S., R. 14 E. Sec. 8: W1/2NW1/4	80
29D	T. 1 S., R. 14 E. Sec. 18: Lots 3 & 4, SE1/4SW1/4	109.45
41D	T. 1 S., R. 15 E. Sec. 1: S1/2SE1/4NW1/4	20
31D	T. 1 S., R. 15 E. Sec. 2: SE1/4NE1/4, N1/2SE1/4	120
32D	T. 1 S., R. 16 E. Sec. 4: SE1/4NE1/4, NE1/4SE1/4	80
10R	T. 1 S., R. 16 E. Sec. 6: Lot 1	1.09

APPENDIX 2.7: LAND TENURE PROPOSAL TRACTS (Continued, Page 5)

Sweet Grass County

Tract Number ^{1/}	Legal Description ^{2/}	Acres
33D	T. 1 S., R. 16 E. Sec. 12: Lots 9, 10, 11, & 12	159.62
34D	T. 1 S., R. 16 E. Sec. 18: NW1/4NE1/4, NE1/4NW1/4	80
54D	T. 1 S., R. 16 E. Sec. 29: NW1/4, E1/2SW1/4, NW1/4SE1/4	280
11R	T. 1 S., R. 17 E. Sec. 26: Lot 3	13.63
36D	T. 1 S., R. 17 E. Sec. 29: SW1/4SE1/4	40
35D	T. 1 S., R. 17 E. Sec. 31: Lot 1	34.31
37D	T. 2 S., R. 17 E. Sec. 10: SW1/4SW1/4	40

Carbon County

Tract Number ^{1/}	Legal Description ^{2/}	Acres
1R	T. 2 S., R. 22 E. Sec. 34: Lot 6 Sec. 35: Lots 10, 11, 12, & 13 T. 3 S., R. 22 E. Sec. 3: Lots 6, 7, 8, & 9, SE1/4NW1/4 Sec. 4: Lots 12, 13, 14, & 15, SE1/4NW1/4, NW1/4SE1/4 Sec. 5: Lot 9 Sec. 8: SE1/4NE1/4, SE1/4SW1/4, N1/2SE1/4 Sec. 9: N1/2NW1/4, SW1/4NW1/4, W1/2SW1/4	1.58 164.88 167.86 205.05 41.91 160 200 941.28
2R	T. 2 S., R. 23 E. Sec. 35: Lot 6	12.40
* 82R	T. 3 S., R. 22 E. Sec. 1: W1/2SW1/4 Sec. 2: E1/2SE1/4	80 80 160
* 83R	T. 3 S., R. 22 E. Sec. 9: NE1/4NE1/4	40
* 84R	T. 3 S., R. 22 E. Sec. 10: SW1/4NE1/4	40
61D	T. 3 S., R. 22 E. Sec. 14: NE1/4SW1/4	40
3R	T. 3 S., R. 23 E. Sec. 5: Lots 6 & 7	92.10
* 85R	T. 3 S., R. 23 E. Sec. 9: NW1/4NE1/4	40
39D	T. 3 S., R. 23 E. Sec. 22: S1/2NW1/4	80

Stillwater County

Tract Number ^{1/}	Legal Description ^{2/}	Acres
* 75R	T. 1 S., R. 18 E. Sec. 24: NW1/4NE1/4, NW1/4, NW1/4SE1/4	240
* 76R	T. 1 S., R. 18 E. Sec. 24: SW1/4SW1/4	40
* 77R	T. 1 S., R. 18 E. Sec. 26: NW1/4NW1/4	40
* 78R	T. 1 S., R. 18 E. Sec. 26: SE1/4	160
12R	T. 1 S., R. 18 E. Sec. 34: Lot 1	49.17
* 79R	T. 1 S., R. 19 E. Sec. 32: N1/2NE1/4	80

APPENDIX 2.7: LAND TENURE PROPOSAL TRACTS (Continued, Page 6)

Stillwater County

Tract Number	Legal Description	Acres
47D	T. 2 S., R. 18 E. Sec. 9: SE1/4SE1/4	40
48D	T. 2 S., R. 18 E. Sec. 10: NE1/4SW1/4	40
* 80R	T. 2 S., R. 19 E. Sec. 8: SE1/4NE1/4	40
* 81R	T. 2 S., R. 19 E. Sec. 8: N1/2SW1/4	80
13R	T. 2 S., R. 19 E. Sec. 14: Lot 1	.13
52D	T. 2 S., R. 20 E. Sec. 10: SE1/4SE1/4	40
14R	T. 2 S., R. 20 E. Sec. 19: Lot 7	.61
15R	T. 2 S., R. 20 E. Sec. 20: Lot 5	5.90
16R	T. 2 S., R. 20 E. Sec. 21: Portion of Lot 2 -	Approx. 10
17R	T. 2 S., R. 20 E. Sec. 29: Lot 10 Sec. 31: Lot 8 Sec. 32: Lots 8, 9, & 10	2.23 .74 30.78 33.75
57D	T. 2 S., R. 23 E. Sec. 20: N1/2NE1/4	80
18R	T. 2 S., R. 23 E. Sec. 34: Lot 3	15.07
56D	T. 3 S., R. 17 E. Sec. 27: SW1/4SW1/4	40
19R	T. 3 S., R. 19 E. Sec. 14: Lot 8	10.09
21R	T. 3 S., R. 19 E. Sec. 22: Lot 3, NE1/4NW1/4	68.16
20R	T. 3 S., R. 19 E. Sec. 22: Lot 2	10.98
40D	T. 3 S., R. 19 E. Sec. 23: SW1/4NE1/4, NE1/4SW1/4, NW1/4SE1/4	120
22R	T. 3 S., R. 19 E. Sec. 28: Lot 3	8.28
42D	T. 3 S., R. 20 E. Sec. 6: Lot 3	40.29
23R	T. 3 S., R. 20 E. Sec. 6: Lots 11 & 12	46.57
24R	T. 3 S., R. 21 E. Sec. 6: Lot 1	25
53D	T. 3 S., R. 21 E. Sec. 7: NE1/4SE1/4	40
25R	T. 3 S., R. 21 E. Sec. 9: Lots 5, 6, 7, & 9	81.26
8F	T. 4 S., R. 16 E. Sec. 2: SW1/4NW1/4, NE1/4SW1/4, NW1/4SE1/4	120
26R	T. 4 S., R. 16 E. Sec. 4: SE1/4NW1/4 Sec. 5: SW1/4SW1/4 Sec. 6: Lot 7, SE1/4SW1/4, S1/2SE1/4 Sec. 7: NE1/4NW1/4 Sec. 8: N1/2N1/2 Sec. 9: NE1/4, E1/2NW1/4, NW1/4NW1/4, N1/2SE1/4, SE1/4SE1/4 Sec. 10: W1/2NW1/4, SW1/4, SW1/4SE1/4 Sec. 14: N1/2NW1/4, SE1/4NW1/4, NE1/4SW1/4 Sec. 15: N1/2N1/2	40 40 156.56 40 160 400 280 160 160 160

APPENDIX 2.7: LAND TENURE PROPOSAL TRACTS (Continued, Page 7)

Stillwater County

Tract Number ^{1/}	Legal Description ^{2/}	Acres
27R	T. 4 S., R. 16 E. Sec. 13: SW1/4NE1/4, S1/2NW1/4	120
28R	T. 4 S., R. 16 E. Sec. 13: SE1/4SE1/4 T. 4 S., R. 17 E. Sec. 18: Lot 4	40 39.73 79.73
29R	T. 4 S., R. 16 E. Sec. 21: SE1/4SW1/4, SW1/4SE1/4 Sec. 28: N1/2NE1/4NW1/4	80 20 100
30R	T. 4 S., R. 16 E. Sec. 22: SE1/4SW1/4, SE1/4 Sec. 23: SW1/4SW1/4 Sec. 26: SE1/4NE1/4, W1/2NW1/4, N1/2S1/2 Sec. 27: NE1/4	200 40 280 160 680
55D	T. 4 S., R. 16 E. Sec. 25: SW1/4NE1/4	40
9F	T. 4 S., R. 17 E. Sec. 5: NE1/4SW1/4, N1/2SE1/4	120
71D	T. 4 S., R. 17 E. Sec. 8: SE1/4SW1/4 Sec. 17: NE1/4NW1/4, S1/2NW1/4	40 120 160

LAND TENURE PROPOSAL SUMMARY

County	Disposal Acreage	# of Tracts	Retention Acreage	# of Tracts	Further Study Acreage	# of Tracts	Total Acreage	# of Tracts
Yellowstone	1,280.00	8	25,273.19	47	2,135.13	11	28,688.32	66
Sweet Grass	1,477.12	16	196.25	8	7.01	1	1,680.38	25
Carbon	120.00	2	1,325.78	7	-	-	1,445.78	9
Stillwater	640.29	10	3,461.26	26	240.00	2	4,341.55	38
Total	3,517.41	36	30,256.48 ^{1/}	88	2,382.14	14	36,156.03	138
							GRAND TOTAL	

^{1/}Includes 26 tracts (totalling 2,982 acres) identified as suitable for exchange.

Source: BLM, 1982

APPENDIX 2.8: AREAS PRESENTLY WITHDRAWN OR PROPOSED FOR WITHDRAWAL FROM MINERAL ENTRY

1. Weatherman's Draw
T. 8 S., R. 24 E.
Sec. 29, E $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$ 240 acres

2. Petroglyph Canyon
T. 9 S., R. 26 E.
Sec. 26, S $\frac{1}{2}$
Sec. 35, lots 1 to 3, inclusive,
lots 6 to 11, inclusive
NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$ 549.28 acres

3. Mystery Cave
T. 8 S., R. 28 E.
Sec. 21, S $\frac{1}{2}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$
N $\frac{1}{2}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ 10 acres

4. Britton Springs Cabin and Corral
T. 58 N., R. 95 W.
Sec. 20, N $\frac{1}{2}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ 20 acres

5. Cottonwood Springs Corrals
T. 58 N., R. 95 W.
Sec. 22, S $\frac{1}{2}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$
N $\frac{1}{2}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ 10 acres

6. Sykes Springs Corral
T. 58 N., R. 95 W.
Sec. 23, SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ 10 acres

7. Crooked Creek Natural Area
T. 58 N., R. 95 W.
Sec. 28, NW $\frac{1}{4}$ 160 acres

APPENDIX 2.9: SUMMARY OF CURRENT GRAZING CAPACITY FOR WILD HORSES

1. Current production excluding the Lower Pasture which is not freely available to wild horses - 2,018 AUMs.
2. Current production of Lostwater area - 223 AUMs
 Current production of Sorenson area - 166 AUMs
 Total - 389 AUMs

By agreement, only 50% allocation will be made on these areas: 389 x 50% = 195 AUMs.

3. Current production for allocation: 2,018 - 195 = 1,823 AUMs.
4. Convert to horse AUMs; 1 horse = 1.25 AUMs

$$\frac{1,823 \text{ AUMs}}{1.25 \text{ AUM}} = 1,458 \text{ Horse AUMs}$$
5. Horses yearlong: $\frac{1,458 \text{ H. AUMs}}{12 \text{ months}} = 121 \text{ Horses}$

Current Level

Range Site	PZ Zone	Condition Class	Total Acres	Acres/AUMs (Median)	AUMs
Grazable Woodland	10-14	F	59	20	2.95
		Un	60	-	-
	15-19	G	32	3	10.8
		F	8	4.4	1.8
		P	33	8.9	3.7
Grazable Woodland w/30-80% canopy cover	15-19	Un	63	-	-
		G	133	-	-
Sandy	10-14	Un	3,615	-	-
		F	35	5	7
Shallow	15-19	G	45	3	15.2

APPENDIX 2.9: SUMMARY OF CURRENT GRAZING CAPACITY FOR WILD HORSES
(Continued, Page 2)

Range Site	PZ Zone	Condition Class	Total Acres	Acres/AUMs (Median)	AUMs
Shallow-Limy	5-9	F	1,430	20	71.5
		P	913	40	22.8
		Un	53	-	-
	10-14	G	400	13.3	30
		F	2,538	20	126.9
		P	1,425	40	35.6
	15-19	Un	329	-	-
		G	480	5.3	90
		F	1,165	8	145.6
P		164	16	10.25	
	Un	538	-	-	
Shallow-Sandy	10-14	F	164	8	20.5
Silty	5-9	P	404	20	20.2
	10-14	F	114	5	22.8
		P	376	10	37.6
	15-19	G	824	2.2	370.8
		F	319	3.3	95.7
Silty-Limy-Stony	5-9	F	138	20	6.9
		P	330	40	8.25
	10-14	G	31	13.5	2.3
		P	13	43.3	.3
Silty-Stony	5-9	P	325	40	8.1
	10-14	G	272	5.3	51
		F	1,153	8	144.1
		P	1,366	16	85.4
		Un	121	-	-
	15-19	G	120	3	40.5
		F	88	4.4	19.8
		P	66	8.9	7.4
		Un	136	-	-
Very Shallow	5-9	P	14	35	.4
	15-19	G	15	5.4	2.8
Very Shallow-Limy	5-9	F	780	20	39
		P	1,241	40	31
		Un	119	-	-
		G			
		F			
		P			
		Un			

APPENDIX 2.9: SUMMARY OF CURRENT GRAZING CAPACITY FOR WILD HORSES
(Continued, Page 3)

Range Site	PZ Zone	Condition Class	Total Acres	Acres/AUMs (Median)	AUMs
Very Shallow-Limy	10-14	G	80	13.3	6
		F	3,240	20	162
		P	1,033	40	25.8
	15-19	Un	407	-	-
		G	343	5.3	64.3
		F	1,267	8	158.4
		P	197	16	12.3
		Un	643	-	-
Rock Outcrop			<u>8,956</u>		<u>-</u>
			38,213*		2,017.75*
			<u>6,083</u>		<u>136.5</u>
			44,296		2,154.25

Wyoming Portion of Horse Range

Range Site	PZ Zone	Condition Class	Total Acres	Acres/AUMs (Median)	AUMs
MD-1			149	49.7	3
M-37			76	47	1.5
M-37(a)			290	78.7	3.5
M-26			359	35.9	10
M-38			<u>787</u>	27.1	<u>29</u>
			1,661		47
Lower Pasture (includes NPS)					
D-1			1,300	38.5	33.75
M-38			623	27.1	23
M-26			1,176	35.9	32.75
			<u>1,323</u>	-	<u>0</u>
			4,422		89.5

APPENDIX 2.9: SUMMARY OF CURRENT GRAZING CAPACITY FOR WILD HORSES
(Continued, Page 4)

* These figures represent the Mystic Allotment and that portion of the PMWHR in Montana - see attached sheet for that portion in Wyoming. The carrying capacity on NFS lands is a BLM estimate and not an allocation on NFS lands. Allocation on NFS lands must be made by the Forest Service in their Forest Plan which is due to be published as a final EIS in 1984. A final determination of AUMs and carrying capacity on the Wild Horse Herd Area will be made jointly with the U.S. Forest Service, National Park Service and BLM in the context of a Wild Horse Herd Management Area Plan to be developed in 1984.

PZ Zone	Condition Class	Total Acres	Acres/AUMs (Median)	AUMs
		6,083	Total for Wyoming	136.5*

*The Wyoming portion of the PMWHR is used as a holding area for wild horses during capture and excessing operations. Limited forage is available in the area and it will be reserved for use during capture operations. The 136.5 AUMs in the Wyoming portion are therefore not calculated into yearlong carrying capacity of the PMWHR.

Sources:

1. Ecological Site Inventory, BLM, 1981.
2. Ocular Reconnaissance Range Survey, BLM, 1971-72.
3. South Carbon County, Montana Cooperative Soil Survey Update Project, BLM and SCS, 1981.

APPENDIX 2.10: SUMMARY OF LONG-TERM POTENTIAL FOR WILD HORSES

1. The potential production is the result of improving range condition on those range sites now in fair range condition that have the capability to respond to intensive management and improve to good condition in 25 years. Those range sites in poor range condition and the less productive range sites in fair range condition will not respond and improve in condition class during the 25 years.

2. Potential Production

Lostwater Area	286 AUMs
Sorenson Ext. Area	257 AUMs
Remaining HR Area	<u>2,139 AUMs</u>
Total	2,682 AUMs

3. Conversion to Horse AUMs:

$$\frac{2,682 \text{ AUMs}}{1.25 \text{ Horse AU}} = 2,146 \text{ Horse AUMs}$$

4. Horses Yearlong = $\frac{2,146}{12} = 179 \text{ Horses}$

Reason for change is that we are only saying that CC can be reached with intensive management. The potential is always there but only in the High Alternative will we possibly reach it.

Long-Term Potential (25 Years)

Range Site	PZ Zone	Condition Class	Total Acres	Acres/AUMs (Upper Potential)	AUMs
Grazable Woodland	10-14	F	59	20	2.95
		Un	60	-	-
	15-19	G	32	2.7	12
		F	8	4	2
		P	33	8	4.1
		Un	63	-	-
Grazable Woodland w/30-80% canopy cover	15-19	G	133	-	-
		Un	3,615	-	-
Sandy	10-14	F/G	35	5/3.3	7/10.5
Shallow	15-19	G	45	2.7	16.9
Shallow-Limy	5-9	F	1,430	20	71.5
		P	913	40	22.8
		Un	53	-	-

APPENDIX 2.10: SUMMARY OF LONG-TERM POTENTIAL FOR WILD HORSES
(Continued, Page 2)

Range Site	PZ Zone	Condition Class	Total Acres	Acres/AUMs (Upper Potential)	AUMs
	10-14	G	400	13.3	30
		F/G	2,538	20/13.3	126.9/ 190.8
		P	1,425	40	35.6
		Un	329	-	-
	15-19	G	480	4.4	108
		F/G	1,165	6.7/5.3	174.75/ 218.4
		P	164	13.3	12.3
		Un	538	-	-
Shallow-Sandy	10-14	F/G	164	6.6/5.3	24.6/ 30.75
Silty	5-9	P	404	20	20.2
	10-14	F/G	114	5/3.3	22.8/34.2
		P	376	10	37.6
	15-19	G	824	2.2	370.8
		F/G	319	3.3/2.2	95.7/ 143.6
Silty-Stony-Limy	5-9	F/G	138	20/13.3	6.9/10.4
		P	330	40	8.25
	10-14	G	31	13.5	2.3
		P	13	43.3	.3
Silty-Stony	5-9	P	325	40	8.1
	10-14	G	272	4.4	61.2
		F/G	1,153	6.7/5.3	172.9/ 216.2
		P	1,366	13.3	102.5
		Un	121	-	-
	15-19	G	120	2.6	45
		F/G	88	4/3	22/29.7
		P	66	8	8.25
		Un	136	-	-
Very Shallow	5-9	P	14	35	.4
	15-19	G	15	4.4	3.4
Very Shallow-Limy	5-9	F	780	20	39
		P	1,241	40	31
		Un	119	-	-
	10-14	G	80	13.3	6
		F/G	3,240	20/13.3	162/243
		P	1,033	40	25.8
		Un	407	-	-
	15-19	G	343	4.4	77.2
		F/G	1,267	6.7/5.3	190/237.6

APPENDIX 2.10: SUMMARY OF LONG-TERM POTENTIAL FOR WILD HORSES
 (Continued, Page 3)

	P	197	13.3	14.8
	Un	643	-	-
Rock Outcrop		<u>8,956</u>	-	<u>-</u>
		38,213*		2,185.8/ 2,545.4
Totals from Wyoming		<u>6,083</u>		<u>136.5</u>
		44,296		2,322.3/ 2,681.9

* These figures represent the Mystic Allotment and that portion of the PMWHR in Montana - see attached sheet for the portion in Wyoming. The carrying capacity on NFS lands. Allocation on NFS lands must be made by the Forest Service in their Forest Plan which is due to be published as a final EIS in 1984. A final determination of AUMs and carrying capacity on the Wild Horse Herd Area will be made jointly with the U.S. Forest Service, National Park Service, and BLM in the context of a Wild Horse Herd Management Area Plan to be developed in 1984.

APPENDIX 2.10: SUMMARY OF LONG-TERM POTENTIAL FOR WILD HORSES
(Continued, Page 4)

Wyoming Portion of Horse Range

Range Site	PZ Zone	Condition Class	Total Acres	Acres/AUMs (Median)	AUMs
MD-1			149	49.7	3
M-37			76	47	1.5
M-37(a)			290	78.7	3.5
M-26			359	35.9	10
M-38			<u>787</u>	27.1	<u>29</u>
			1,661		47
Lower Pasture (includes NPS)					
D-1			1,300	38.5	33.75
M-38			623	27.1	23
M-26			1,176	35.9	32.75
			<u>1,323</u>	-	<u>0</u>
			4,422		89.5
			6,083	Total for Wyoming	136.5

Sources:

1. Ecological Site Inventory, BLM, 1981
2. Ocular Reconnaissance Range Survey, BLM, 1971-1972
3. Southern Carbon County Area Montana Cooperative Soil Survey Update Project, BLM and SCS, 1981

APPENDIX 3.1: PHYSICAL PROPERTIES OF SOILS

Geomorphic Soil Group	Range in Slope Causes	Surface Water Runoff Potential	Avg. Annual Runoff* Acre-feet/Acre	EROSION SUSCEPTIBILITY		Hydrologic Soil Group	Soil Loss Equation "K" Factor (Surface Layer)
				Water Erosion Rating	Wind Erodibility Group (WEG)		
ONE: Shale and sandstone uplands			.06 - .08				
Loamy soils	Gently rolling to very steep	Medium		Mod. - High	Severe	B, C	.32, .37
Clayey soils	Gently rolling to very steep	Med. - Very rapid		Mod. - High	Severe	C, D	.37, .43
Sandy soils	Gently rolling to strongly sloping	Very Slow - Slow		Slight - Mod.	Very Severe	A, B	.20
TWO: Floodplains, terraces and fans			.06 - .08				
Loamy soils	Nearly level to strongly sloping	Medium		Slight - High	Mod. - Severe	B, C	.24 - .37
Clayey soils	Nearly level to strongly sloping	Slow - Rapid		Slight - High	Slight-Severe	C, D	.37
Sandy soils	Nearly level to strongly sloping	Very slow - Slow		Slight - Mod.	Very Severe	A, B	.17 - .24
THREE: High terraces and benches			.06 - .08				
Loamy soils	Nearly level to moderately sloping	Medium		Slight - High	Mod. - Severe	B, C	.32, .37
FOUR: Mountains and foothills			.19 - .21				
Loamy soils	Gently sloping to very steep	Slow - Med.		Slight - High	Mod. - Severe	B, C	.28 - .37

*Loamy and clayey soils will produce .04 - .06 acre-feet/acre in the 5-9" precipitation zone of Carbon County.

Column

1. GEOMORPHIC SOIL GROUP

A group of soils having a unique kind and degree of limitation for alternative land use and treatment based on parent material, soil quality and land features.

2. SLOPE CLASSES

Description	Slope Percent	Description	Slope Percent
Nearly level	0 to 2	Moderately steep or hilly	15 to 25
Gently sloping and undulating	2 to 4	Steep	25 to 45
Moderately sloping or gently rolling	4 to 8	Very steep	45 + %
Strongly sloping or strongly rolling	8 to 15		

3. SURFACE WATER RUNOFF

Descriptions

- Very slow - Free water lies on the surface for long periods or enters immediately into soil.
- Slow - Free water covers the soil for significant periods or enters the soil rapidly and a large part of the water passes through the profile or evaporates into the air.
- Medium - Surface water flows away at such a rate that a moderate proportion of the water enters the soil profile and free water lies on the surface for only short periods. With medium runoff, the loss of water over the surface does not reduce seriously the supply available for plant growth.
- Rapid - A large proportion of the precipitation moves rapidly over the surface of the soil and a small part moves through the soil profile. Surface water runs off nearly as fast as it is added.
- Very rapid - A very large part of the water moves rapidly over the surface of the soil and a very small part goes through the profile.

4. EROSION SUSCEPTIBILITY

A. Water Erosion Ratings

Water erosion hazard is rated for soils that are bare of vegetation.

2 - 4	Less than 250' 250 - 1,000' More than 1,000'	Slight Moderate Moderate	Slight Moderate Moderate	Slight Slight Moderate	Slight Slight Slight
4 - 8	Less than 250' 250 - 1,000' More than 1,000'	Moderate Moderate High	Moderate Moderate Moderate	Slight Moderate Moderate	Slight Slight Slight
8 - 15	Less than 250' 250 - 1,000' More than 1,000'	High High High	Moderate High High	Moderate Moderate High	Moderate Moderate Moderate
15 - 25	Less than 250' 250 - 1,000' More than 1,000'	High High High	High High High	Moderate High High	Moderate Moderate High
25+	All	High	High	High	High

B. Wind Erodibility Groups (WEG)

<u>WEG</u>	<u>Predominant Soil Texture Class of Surface Layer</u>
1. (Very Severe)	- All sands: coarse sand, medium sand, fine sand, and very fine sand.
2. (Very severe)	- All loamy sands: loamy coarse sand, loamy sand, loamy fine sand and loamy very fine sand.
3. (Severe)	- All sandy loams: coarse sandy loam, sandy loam, fine sandy loam and very fine sandy loam.
4L. (Severe)	- All calcareous loam, silt loam, sandy clay loam, or calcareous clay loam and silty clay loam soils with less than 35 percent clay content and more than 5 percent finely divided calcium carbonate.
4. (Severe)	- All clays and silty clays, and clay loam and silty clay loam soils with more than 35 percent clay.
5. (Moderate)	- Noncalcareous loam and silt loam soils with less than 18 percent clay, and all noncalcareous sandy clay loam and sandy clay soils.
6. (Moderate)	- All loam and silt loam soils with more than 18 percent clay, and clay loam soils with less than 35 percent clay content.
7. (Slight)	- Noncalcareous silty clay loam soils with less than 35 percent clay.
8. (Non-erosive)	- Soils not suitable for cultivation due to wetness and percent rock fragments. Wind erosion not a problem.

5. HYDROLOGICAL SOIL GROUP

- (Low runoff potential). Soils having high infiltration rates even when thoroughly wetted and consisting chiefly of deep, well to excessively drained sands or gravels. These soils have a high rate of water transmissions.
- Soils having moderate infiltration rates when thoroughly wetted and consisting chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.
- Soils having slow infiltration rates when thoroughly wetted and consisting chiefly of soils with a layer that impedes downward movement of water, or soils with moderately fine to fine texture. These soils have a slow rate of water transmission.
- (High runoff potential). Soils having very slow infiltration rates when thoroughly wetted and consisting chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very slow rate of water transmission.

6. SOIL LOSS EQUATION

"K" Factor - It is the soil erodibility factor. It shows how easily each soil will erode when rain falls on bare ground; or is a measure of the susceptibility of soil particles to detachment and transport by rainfall and runoff.

Acceptable entries for K are: .02, .05, .10, .15, .17, .20, .24, .28, .32, .37, .43, .49, .55, .64. The larger the number the more susceptible the soil is to erosion.

Sources:

- Southern Carbon County Area, Montana: Cooperative Soil Survey Update Project, Soil Conservation Service - BLM, May 1981.
- Prairie Potholes EIS, BLM, September, 1981.

INTRODUCTION

The following is presented to define the meaning of the term "riparian," as it will be used in the Billings Area RMP/EIS. Three kinds of riparian zones and three woody types (which are not riparian but have greater than average soil moisture) are described. References to ecological range site or woodland site descriptions are made where applicable.

Riparian zones are defined as a specialized form of wetland producing specific kinds of vegetation used for wildlife habitat, livestock grazing, stream bank stabilization, and control of water quality.

There are three kinds of riparian zones (listed with characteristic vegetation):

Description of Riparian Zones

1. Wet or Subirrigated areas along, adjacent to, or contiguous with rivers and streams.

Characteristic vegetation:

<u>Woody Species</u>	<u>Grasses & Grasslike</u>
Cottonwood	American sloughgrass
Willow	Bearded wheatgrass
Buffaloberry	Mat muhly
Snowberry	Northern mannagrass
Rose	Prairie cordgrass
	Slender wheatgrass
	Tall reedgrasses
	Tufted hairgrass
	Western wheatgrass
	Sedges and rushes

Refer to range site descriptions for Wetland, Subirrigated, and Saline Lowland for understory species or if tree canopy cover is over 10% refer to Woodland Site description for Hardwood Bottom land. Greasewood is the characteristic woody species along streams in saline floodplains.

2. Periodically flooded lake and pit reservoir areas.

Characteristic vegetation:

Sedges	Western wheatgrass
Rushes	Foxtail barley (Invader)
Nuttall alkaligrass	

3. Reservoirs with relatively stable water levels.

Characteristic vegetation:

Sedges	Cattails
Rushes	Willow
Bulrush	Cottonwood

Note: Many of these areas contain introduced species such as Russian olive, and caragana.

Description of Woody Types (not riparian)

Other areas with specific woody types (having grass understory and greater than average soil moisture) are also important for wildlife habitat, livestock grazing, and watershed protection. They are associated with two landforms:

1. Woody floodplain type.

Areas on floodplains having woody species and an understory of grasses. These areas may be adjacent to riparian zones, but have no significant water table or stream influence. They are in floodplains receiving rare-to-common flooding of brief duration. (Flooding may be from stream overflow from adjacent valley sides onto floodplains area.) These areas are in overflow range sites or woodland sites.

Characteristic vegetation:

<u>Woody Species</u>	<u>Grasses</u>
Big sagebrush	Basin wildrye
Silver sagebrush	Green needlegrass
Snowberry	Western wheatgrass
Rose	Slender wheatgrass
Buffaloberry	Canby bluegrass
Serviceberry	Needleandthread
Chokecherry	Other perennial
Greasewood	grasses
Rubber rabbitbrush	

Refer to Overflow range site or Hardwood Bottom land woodland site descriptions for understory vegetation.

2. Woody Draw Type.

Narrow areas along some deeply dissecting draws in the uplands with woody or brushy types.

Characteristic vegetation:

<u>Woody Species</u>	<u>Grasses</u>
Buffaloberry	Basin wildrye
Snowberry	Green needlegrass
Rose	Western wheatgrass
Serviceberry	Slender wheatgrass
Chokecherry	
Silverberry	

Willow and cottonwood localized by seeps or springs. (Minor riparian zone)

Refer to Woodland Site Description for Hardwood Bottom land for other understory species.

APPENDIX 3.3: SUITABILITY GUIDE FOR RANGELAND MECHANICAL TREATMENTS

Montana BLM
December 1982

The following guide has been developed by BLM Soil Scientists, and other specialists, for use on Montana and Dakota public lands.

Mechanical treatments may be considered as an alternative method of increasing vegetative production and improving watershed condition. Treatment feasibility should be considered where grazing management systems cannot reach desired goals in a realistic time.

Factors in influencing feasibility of treatments are: (1) soil properties, (2) existing plant community; (3) objectives of treatment; (4) anticipated response from treatment; (5) economics; (6) availability of equipment; (7) conditions that influence operation of equipment.

The objectives of mechanical treatment should be carefully analyzed. It may be desirable to: (1) change existing vegetation (i.e., reduce club-moss-blue grama dominance) and/or (2) correct a soil problem (i.e., break-up a claypan or a compacted layer). Vegetation can be changed to improve range condition or to maximize production. Treatment should be selected to best reach the desired objective.

When it has been determined that management of livestock cannot reach the desired improvement in vegetation, suitability for mechanical treatment can be determined by considering: (1) soil properties and (2) conditions that influence operation of equipment. To use the table, first consider each factor in the left column independent of others, then consider interrelated factors to reach a final rating. These are evaluated in the following table.

Relevant conditions not evaluated in the table must also be considered. For example, kinds of bedrock (i.e., consolidated, fractured, etc.) will influence suitability for mechanical treatments. Aspect will influence the amount of moisture available for plant use.

Treatment effect upon water infiltration and runoff is an important consideration. Many treatments will increase infiltration and reduce runoff; but, less runoff may not be desirable in cases where downstream use of water has a higher priority.

Source: BLM, 1982

Montana BLM
Dec.

SUITABILITY GUIDE FOR RANGELAND MECHANICAL TREATMENT

Sedimentary Plains, Mountains and Foothills
10 to 14 inch

Property Affecting Use	Suited	Unsuited	Suited	Unsuited	Suited	Unsuited
Slope	≤ 15%	> 15%	≤ 15%	> 15%	≤ 8%	> 8%
Depth to Bedrock						
Lithic	≥ 20"	< 20"	≥ 20"	< 20"	≥ 20"	< 20"
Paralithic	≥ 10"	< 10"	≥ 10"	< 10"	≥ 10"	< 10"
Calcium Carbonate *	≥ e, es	≥ ev	< e	≥ es, ev	≥ e	≥ es, ev
Texture of Surface layer*	All textures except cos, s, fs, ls	cos, s, fs, lfs, ls	All textures except cos, s, fs, lfs, ls	cos, s, fs, lfs, ls	All textures except cos, s, fs, lfs, ls	cos, s, fs, lfs, ls
Coarse Fragments in Surface Layer; (vol.)						
Gravel + Cobbles	≤ 25%	> 25%	≤ 25%	> 25%	≤ 15%	> 15%
Stones + Boulders	≤ 3%	> 3%	≤ 3%	> 3%	≤ 3%	> 3%
Salts (mmhos/cm)	< 12	≥ 12	< 12	≥ 12	≤ 4	> 4
SAR	< 12	≥ 12	< 12	≥ 12	≤ 4	> 4
Structure of Surface Layer	All except those in unsuited.	Single grain-ed w/coarse texture or >40% clay w/massive or vesicular crust.	All except those in unsuited.	Single grain-ed w/coarse texture or >40% clay w/massive or vesicular crust.	All except those in unsuited.	Single grain-ed w/coarse texture or > 40% clay w/massive or vesicular crust.
Flooding Hazard	None to occasional	Frequent	None to occasional	Frequent	None to occasional	Frequent
Drainage Class	All except those in unsuited.	Excessively drained; poor or very poorly drained.	All except those in unsuited.	Excessively drained; poor or very poorly drained.	All except those in unsuited.	Excessively drained; poor or very poorly drained.
Tree Canopy Cover	< 10%	> 10%	< 10%	> 10%	0	> 0

*Applies to surface layer (upper 6 to 8 inches).

APPENDIX 3.4: SELECTION OF LAND TREATMENT BY RANGE SITE

Montana BLM
December 1982

In addition to the foregoing interpretation guide on the suitability of soils and related factors for rangeland mechanical treatment, it may be helpful to consider the selection of land treatment according to range sites.

The following table shows the type of treatment (mechanical, burning or chemical) suited to correct common soil or vegetation problems found on certain range sites. Where two or more vegetation or soil problems are present (dense sagebrush on claypan soils) select the treatment that will solve both problems; the claypan problem can't be reduced just by burning sagebrush. Range sites not shown in the table are generally unsuited to mechanical treatments.

Note that vegetative changes can be accomplished with fire, chemicals or a surface layer treatment (i.e., chiseling) but to correct a subsoil problem may require a deeper treatment (i.e., furrowing or ripping).

Additional factors must be considered to determine the final suitability of a site for mechanical treatment. These factors are in the foregoing section, on rating soil properties and related factors. The narrative discusses objectives of a treatment.

Finally, land treatments cannot be considered an alternative to good management practices, but will require a high level of management following the treatments.

GUIDE TO TREATMENT SELECTION BY DOMINANT RANGE SITES ^{1/}

Vegetation or Soil Problem	CLAY PAN	CLAYEY	DENSE CLAY ^{2/}	OVERFLOW	SANDY	SILTY	SHALLOW
Blue grama and/or clubmoss	A4, A2, A1, A3 C1, C3, C2 D1, D2	A3, A2, A1 B1, B3, B2 D1, D2	N/A	A1, A2, A3, A4 D1, D2	A3, A2, A1 D1, D2	A3, A2, A1 B1, B3, B2 D1, D2	A3, A2, A1 B1, B3, B2 D1
Claypan	A4, A2, A1, A3 C1, C3, C2 D1, D2	N/A	N/A	N/A	A4 D1, D2 E	N/A	N/A
Surface Layer compaction Less than 8 inches	A3, A2, A1 B1, B3 D1	A3, A2, A1 B1, B3, B2 D1, D2	A2, A1 C1, C3	A2, A1, A3 D1	A3, A2, A1 D1, D2	A3, A2, A1 B1, B3, B2 D1, D2	A3, A2, A1 B1, B3, B2 D1, D2
Subsoil compaction More than 8 inches	A4, A3 C1, C3 E	A4, A1, A2, A3 C1, C2, C3 D1, D2	N/A	A4, A2, A1, A3 D1	N/A	A4, A2, A1, A3	N/A
Dense big sagebrush (30% canopy cover)	F, H D2	F, H D2	F, H	N/A	N/A	F, H D2	F, H D2
Weedy or nearly barren areas	C2 D2, D1	D1, D2 B2, B1 C2 A2, A3, A1	A2, A1 C2	A2, A3 D1, D2	D1, D2	D1, D2 B2 C2	B2 C2 D1, D2
Borrow areas	D1, D2 G	D1, D2 G	D1, D2 G	D1, D2 G	D1, D2 G	D1, D2 G	D1, D2 G

^{1/} Make choice of treatments based on range condition, planned grazing system, available equipment, desire of permittee and benefit/cost. The order of listed options may be changed based on local conditions.

^{2/} Good range management is usually the most economical choice of treatment due to the low production potential on this range site.

These range sites are dominant in the treatment area.

NOTE: Fertilizer is a tool that can be used to encourage better livestock distribution in addition to other uses.

KEY TO TREATMENTS ON RANGELAND

- A Chiseling at 4-6 inch depth
A1 Using straight shanks - 2 operations (last on contour)
A2 Using twisted shanks - 2 operations (last on contour)
A3 Using 6-inch shovels (sweeps) - 1 operation (on contour)
A4 Deep chiseling at 6 - 10-inch depth - 2 operations (last on contour)
- B Contour scalping at 2 - 4-inch depth
B1 Interseed with alfalfa
B2 Interseed with grass and alfalfa
B3 No interseeding
- C Contour furrowing at 4 - 10-inch depth
C1 Interseed with alfalfa
C2 Interseed with grass and alfalfa
C3 No interseeding
- D Seedbed preparation and seeding
D1 Two operations with chisel, then third operation with drill attached.
D2 Plow and seed.
- E Ripping at 10-20-inch depth
- F Burning
- G Fertilizing
- H Chemical

Source: BLM, 1982

APPENDIX 3.5: MEMO ON ADMINISTRATION ON
THE PMWHR BETWEEN WYOMING AND MONTANA

UNITED STATES GOVERNMENT

Memorandum

TO : District Manager, Billings District, Montana
District Manager, Worland District, Wyoming

FROM : State Director, Montana
State Director, Wyoming

SUBJECT: Administration of the Pryor Mountain Wild Horse Range

DATE: MAR 18 1975

This memo supersedes the memo of January 9, 1969, on the same subject. A new memo is deemed necessary for the dual purpose of 1) Shifting jurisdiction of additional national resource lands from the Worland District to the Billings District, and 2) Broadening and clarifying the nature of the responsibilities shifted.

On September 9, 1968, the Secretary of the Interior established the Pryor Mountain Wild Horse Range by so designating a block of approximately 29,700 acres of national resource lands in the State of Montana and 2,300 acres in the State of Wyoming. On September 9, 1969, the Assistant Secretary of the Interior designated an additional 1680 acres in the State of Wyoming as a part of the Pryor Mountain Wild Horse Range. Copies of the Federal Register publications for the two designations are attached.

Since that time, it has been determined and mutually agreed by the State Directors of Wyoming and Montana that an additional 2,360 acres of national resource land in Wyoming and 560 acres of national resource land in Montana be made a part of the Wild Horse Range to facilitate management pursuant to authority contained in Public Law 92-195. A description of this latter 2,360 acres is attached. In total, this will result in approximately 6,340 acres of national resource lands in Wyoming that will be a part of the Pryor Mountain Wild Horse Range.

Subject to valid existing rights, the lands involved in the Pryor Mountain Wild Horse Range are to be primarily administered for the protection and management of wild horses, wildlife, watershed, recreation, archaeological and scenic values.

The administration of the range requires close coordination with several State and Federal agencies and with representatives from a number of interest groups. Proper management of the resources makes it necessary for BLM personnel to spend considerable time on the site and to maintain close surveillance on resource conditions. The conditions and requirements of managing this special purpose area have dictated that one office of the Bureau be the focal point for administration.

Since a fraction of the total area is located in the State of Wyoming, and since the critical wildlife habitat is essential to species originating in Montana and the effect of watershed management accrues principally downstream in the State of Montana, it is only logical that the range in total should be administered by the Montana office of the Bureau.



The logic of total administration by the Montana office has been further demonstrated by the successful management of the range by the Billings office.

In view of the foregoing, it is reaffirmed that the Billings District Office will administer resource management in both the Montana and the Wyoming portions of the Pryor Mountain Wild Horse Range, including but not limited to grazing, wildlife, soil and watershed conservation, recreation, lands, minerals, forestry, fire, cadastral survey, access, etc. No action responsibilities beyond those functions of application or offer and maintenance of official records is intended by Wyoming offices.

As an example, all applications or offers filed pursuant to the public land and mineral leasing laws for national resource land in Wyoming within the range will be filed in Cheyenne and referred to the District Manager, Billings, Montana, for report and recommendations including any special stipulations necessary to further the objectives of the range.

For the purpose of coordination and record keeping, the State Director of Wyoming will be advised of all transactions involving lands in Wyoming in order that land office plats, statistical reports and improvement records may be kept current. Since the State of Wyoming is concerned with the enforcement of livestock sanitary measures, game management, recreation and its share of revenues from the public lands located within the borders of the state, all such matters including news releases and public information programs affecting Wyoming will be coordinated with the Worland District and State Director of Wyoming.

The contents of this memorandum are subject to periodic review and may be modified by mutual consent of the State Directors.



State Director
Wyoming



State Director
Montana

Attachments: Federal Register publications 9/12/68 and 9/13/69
Description of additional 2,360 Wyoming acres.

APPENDIX 3.6: STATE ECOSYSTEM/LANDFORM REPRESENTATION EXISTING IN STATUTORY WILDERNESS

A. Ecosystem/Landform No.	Name	BLM Areas		Existing Representations in Statutory Wilderness Other Agency Areas*		BLM Areas - Other States		Other Agency Areas*	
		No. Areas	Acreage	Agency No.	Acreage	State No.	Acreage	State No.	Acreage
Bailey/Kuchler #57	Grass/Needlegrass/Wheatgrass	N/A	N/A	USFWS 1	20,847	N/A	N/A	N/A	N/A
Bailey/Kuchler #56	Foothills Prairie	N/A	N/A	USFWS 2	1,037,918	N/A	N/A	N/A	N/A

Totals

B. Ecosystem/Landform No.	Name	Representations in Wilderness Endorsed by President		Other Agency Areas*		BLM Areas - Other States		Other Agency Areas*	
		No. Areas	Acreage	Agency No.	Acreage	State No.	Acreage	State No.	Acreage
Bailey/Kuchler #57	Grass/Needlegrass/Wheatgrass	N/A	N/A	USFWS 15	161,480	N/A	N/A	N/A	N/A
Bailey/Kuchler #56	Foothills Prairie	N/A	N/A	USFWS 15	121,520	N/A	N/A	N/A	N/A

Totals

C. Ecosystem/Landform No.	Name	District	BLM WSAs		Potential Sources of Representations		Other Agency WSAs*	
			No.	Acreage	Agency	Region, Park, Refuge	No.	Acreage
Bailey/Kuchler #57	Grass/Needlegrass/Wheatgrass	Lewistown	8	152,437				
		Miles City	5	81,372	N/A	N/A	N/A	N/A
		Butte	1	5,976				
Bailey/Kuchler #56	Prairie Foothills	Butte	17	147,478	USFS	Lewis & Clark	1	26,068

* Includes areas administered by the State as Wilderness.

NATIONAL ECOSYSTEM/LANDFORM REPRESENTATION

A. Ecosystem/Landform No.	Name	State	Existing Representations in Statutory Wilderness BLM Areas		Other Agency Areas*		Acres
			District	No.	Acreage	Agency	
Bailey/Kuchler #57	Grass/Needlegrass/Wheatgrass	N/A	N/A	N/A	N/A	Montana	USFWS 1 20,847
Bailey/Kuchler #56	Foothills Prairie	N/A	N/A	N/A	N/A	Montana	USFWS 2 1,037,918

B. Ecosystem/Landform No.	Name	State	Representatives in Wilderness Endorsed by President		Other Agency Areas*		Acres
			District	No.	Acreage	Agency	
Bailey/Kuchler #57	Grass/Needlegrass/Wheatgrass	N/A	N/A	N/A	N/A	Montana	USFWS 15 161,480
Bailey/Kuchler #56	Foothills Prairie	N/A	N/A	N/A	N/A	Montana	USFWS 5 121,520

C. Ecosystem/Landform No.	Name	State	Location of BLM WSAs with Potential Representations		Acres
			District	Number of Areas	
Bailey/Kuchler #57	Grass/Needlegrass/Wheatgrass	Montana	Lewistown	8	152,437
			Miles City	5	81,372
			Butte	1	5,976
Bailey/Kuchler #56	Prairie Foothills	Montana	Butte	17	147,478

D. Ecosystem/Landform No.	Name	State	Location of Other Agency Study Areas with Potential Representations*		Acres
			District	Number of Areas	
Bailey/Kuchler #57	Grass/Needlegrass/Wheatgrass	N/A	N/A	N/A	N/A
Bailey/Kuchler #56	Prairie Foothills	N/A	N/A	N/A	N/A

* Includes areas administered by the State as Wilderness.

APPENDIX 3.7: PROXIMITY TO POPULATION CENTERS

A. Population Centers Within One Day's Travel Time of WSAs Statutory Wilderness Within One Day's Travel Time of Identified Population Centers

	<u>State</u>	<u>No.</u>	<u>Acreage</u>
Billings, Montana	Montana	6	2,380,100
	Wyoming	5	2,179,042
			<u>4,559,142</u>
Great Falls, Montana	Montana	13	3,160,539
	Wyoming	3	1,594,800
	Idaho	2	3,318,228
			<u>8,073,567</u>
Casper, Wyoming	Colorado	11	979,729
	Montana	1	849,400
	Wyoming	6	2,193,332
			<u>4,022,461</u>

B. Wilderness Areas Endorsed by the President Within One Day's Travel Time of Identified Population Centers

	<u>State</u>	<u>No.</u>	<u>Acreage</u>
Billings, Montana	Montana	33	676,300 Est.
	Wyoming	21	2,770,500 Est.
			<u>3,446,800 Est.</u>
Great Falls, Montana	Montana	48	1,911,300 Est.
	Wyoming	12	2,048,000 Est.
	Idaho	11	657,800 Est.
			<u>4,617,100 Est.</u>
Casper, Wyoming	Colorado	2	469,463
	Montana	3	287,000
	Utah	4	187,302
	Wyoming	26	2,972,831
			<u>3,916,596</u>

C. Other Study Areas Within One Day's Travel Time of Identified Population Centers

	<u>State</u>	<u>BLM</u>		<u>Other Agency</u>		
		<u>No.</u>	<u>Acreage</u>	<u>State</u>	<u>No.</u>	<u>Acreage</u>
Billings, Montana	Montana	41	414,404	Montana	23	1,152,900 Est.
	Wyoming	34	320,596	Wyoming	6	365,200 Est.
	Idaho	1	24,922	Idaho	2	153,750 Est.
			<u>759,922</u>			<u>1,670,850 Est.</u>
Great Falls, Montana	Montana	37	358,300	Montana	25	1,207,750 Est.
	Wyoming	1	25,210	Idaho	2	49,200 Est.
	Idaho	5	54,368			<u>1,256,950 Est.</u>
			<u>437,878</u>			
Casper, Wyoming	Colorado	19	201,812	Colorado	4	135,430
	Montana	6	41,001	Idaho	1	202,630
	Utah	5	7,260	Montana	1	480
	Wyoming	49	582,065	Wyoming	9	460,422
			<u>832,138</u>			<u>798,962</u>

Source: BLM, 1982

APPENDIX 3.8: STATEWIDE WILDERNESS STATUS SUMMARY

A. Status of BLM Areas Under Study

County	BLM District	Unit Number	Total Acreage	Study Start and Completion Dates		
				Start	Completion	Status
Madison	Butte	MT-076-063	860	1981	1983	Part of USFS Planning EIS
Madison	Butte	MT-076-079	1,469	1980	1980	Completed USFS Draft
Teton	Butte	MT-075-102	4,927	1980	1983	MFP 2 Complete
Teton	Butte	MT-075-105	3,085	1980	1983	MFP 2 Complete
Teton	Butte	MT-075-106	3,086	1980	1983	MFP 2 Complete
Teton	Butte	MT-075-107	196	1980	1983	MFP 2 Complete
Lewis & Clark	Butte	MT-075-110	595	1980	1983	MFP 2 Complete
Jefferson	Butte	MT-075-114	3,585	1980	1983	MFP 2 Complete
Jefferson	Butte	MT-075-115	5,976	1980	1983	MFP 2 Complete
Park	Butte	MT-075-133	53	1980	1983	MFP 2 Complete
Powell	Butte	MT-074-150	11,580	1982	1985	URA 2 Complete
Powell	Butte	MT-074-151a	11,380	1982	1985	URA 2 Complete
Powell	Butte	MT-074-151b	4,257	1982	1985	URA 2 Complete
Granite	Butte	MT-074-155	520	1982	1985	URA 2 Complete
Carbon	Lewistown	MT-067-205	3,955	1982	1983	MFP 2 Complete
Carbon	Lewistown	MT-067-206	16,927	1982	1983	MFP 2 Complete
Carbon	Lewistown	MT-067-207	4,550	1982	1983	MFP 2 Complete
Golden Valley	Lewistown	MT-067-212	6,870	1982	1983	MFP 2 Complete
Valley	Lewistown	MT-064-356	59,112	1983	1984	URA 2 Complete
Rosebud	Miles City	MT-027-701	8,440	1981	1984	MFP 2 Complete
Powder River	Miles City	MT-027-702	5,650	1981	1984	MFP 2 Complete
Rosebud	Miles City	MT-027-736	1,484	1981	1984	MFP 2 Complete

B. Recommendations Transmitted by this Report

District	Resource Area	Plan Name	Unit Number	Unit Name	Total Acreage	Recommendations	
						Acres Suitable	Acres Nonsuitable
Lewistown	Billings	Billings RMP	MT-067-212	Twin Coulee	6,870	0	6,870
			MT-067-206	Pryor Mountain	16,927	16,927	0
			MT-067-205	Burnt Timber Canyon	3,955	3,430	525
			MT-067-207	Big Horn Tack-on	4,550	0	4,550

C. Completed BLM Studies -- Awaiting Presidential Recommendations

District	Resource Area	Plan Name	Unit Number	Unit Name	Total Acreage	SD's Preliminary Recommendations
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-001	Ruby Mountains	26,611 ac.	15,615 ac. suitable 10,996 ac. nonsuitable
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-002	Blacktail Mtns.	17,479 ac.	10,986 ac. suitable 6,493 ac. nonsuitable
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-034	Farlin Creek	1,139 ac.	610 ac. suitable 529 ac. nonsuitable
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-007	E. Fork Black-tail Deer Creek	6,180 ac.	6,180 ac. nonsuitable
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-022	Hidden Past Creek	15,475 ac.	15,475 ac. nonsuitable
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-026	Belle Limekiln Canyons	9,588 ac.	9,588 ac. nonsuitable
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-028	Henneberry Ridge	9,756 ac.	9,756 ac. nonsuitable
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-069	Axolotl Lake	6,578 ac.	6,578 ac. nonsuitable
Lewistown	Phillips	Missouri Breaks Wilderness Suitability Study/EIS	MT-066-256	Cow Creek	34,050 ac.	21,590 ac. suitable 12,460 ac. nonsuitable
Lewistown	Phillips	Missouri Breaks Wilderness Suitability Study/EIS	MT-066-266	Antelope Creek	12,350 ac.	9,600 ac. suitable 2,750 ac. nonsuitable
Lewistown	Valley	Missouri Breaks Wilderness Suitability Study/EIS	MT-065-278	Burnt Lodge	13,850 ac.	13,850 ac. suitable
Miles City	Big Dry	Missouri Breaks Wilderness Suitability Study/EIS	MT-024-657	Seven Blackfoot	20,250 ac.	5,710 ac. suitable 14,540 ac. nonsuitable
Miles City	Powder River	Missouri Breaks Wilderness Suitability Study/EIS	MT-024-684	Terry Badlands	43,450 ac.	29,020 ac. suitable 14,430 ac. nonsuitable
Lewistown	Judith	Missouri Breaks Wilderness Suitability Study/EIS	MT-068-244	Dog Creek South	5,150 ac.	5,150 ac. nonsuitable
Lewistown	Judith	Missouri Breaks Wilderness Suitability Study/EIS	MT-068-246	Woodhawk	8,100 ac.	8,100 ac. nonsuitable

C. Completed BLM Studies -- Awaiting Presidential Recommendations (Continued)

District	Resource Area	Plan Name	Unit Number	Unit Name	Total Acreage	SD's Preliminary Recommendations
Lewistown	Havre	Missouri Breaks Wilderness Suitability Study/EIS	MT-066-250	Stafford	4,800 ac.	4,800 ac. nonsuitable
Lewistown	Havre	Missouri Breaks Wilderness Suitability Study/EIS	MT-066-253	Ervin Ridge	10,200 ac.	10,200 ac. nonsuitable
Miles City	Big Dry	Missouri Breaks Wilderness Suitability Study/EIS	MT-024-675	Bridge Coulee	5,900 ac.	5,900 ac. nonsuitable
Miles City	Big Dry	Missouri Breaks Wilderness Suitability Study/EIS	MT-024-677	Musselshell Breaks	8,650 ac.	8,650 ac. nonsuitable
Miles City	Big Dry	Missouri Breaks Wilderness Suitability Study/EIS	MT-024-633	Billy Creek	3,450 ac.	3,450 ac. nonsuitable

D. Statutory Wilderness (all agencies)

Agency	County(s)	Unit Name & Number	Unit Acreage
BLM	N/A	N/A	N/A
Agency	County(s)	Unit Name & Number	Unit Acreage
USFS	Carbon, Stillwater, Sweet Grass, Park	Absaroka-Beartooth, NF 106	920,377
USFS	Granite, Ravalli, Deer Lodge, Beaverhead	Anaconda-Pintler, NF 003	157,874
USFS	Flathead, Teton, Lewis & Clark, Powell	Bob Marshall, NF 005	1,009,356
USFS	Lincoln, Sanders	Cabinets, NF 010	94,272
USFS	Lewis & Clark	Gates of the Mountains, NF 027	28,562
USFS	Flathead Lake	Great Bear, NF 107	286,700
USFS	Missoula	Mission Mountains, NF 050	73,877
USFS	Missoula	Rattlesnake, 1-801	20,000
USFS	Lewis & Clark, Powell	Scapegoat, NF 073	239,296
USFS	Ravalli	Selway-Bitterroot, NF 074	248,893
USFS	Granite	Welcome Creek, NF 103	28,135
TOTAL USFS		Number of Areas 11	3,107,342
Agency	County(s)	Unit Name & Number	Unit Acreage
USFWS	Beaverhead	Red Rock Lakes, WR-036	32,350
USFWS	Sheridan	Medicine Lake National Wildlife Refuge, WR-027	11,800
USFWS	Phillips	UL Bend National Wildlife Refuge, WR-047	20,847
TOTAL USFWS		Number of Areas 3	64,997
Agency	County(s)	Unit Name & Number	Unit Acreage
NPS	N/A	N/A	N/A
Agency	County(s)	Unit Name & Number	Unit Acreage
State Admin-istered	N/A	N/A	N/A

E. Recommendations Pending Before Congress (all agencies)

Agency	County(s)	Unit Name	Unit Number	Unit Acreage*
USFS	Lincoln	Cabinet Face West	C 1670	8,250
USFS	Sanders, Lincoln	Scotchman Peaks	A & B 1662	60,416
USFS	Sanders	Cabinet Mtn. Addition	C 1681	442
USFS	Sanders	Chippewa Creek (Cabinet Mountain Addition)	1682	382
USFS	Sanders	McKay Creek	B 1676	6,510
USFS	Ravalli	Schley Mountain (Great Burn)	D 1301	12,600
USFS	Ravalli	Hoodoo (Great Burn)	Q 1301	65,097
USFS	Ravalli	Blodgett Canyon	1061	9,600
USFS	Ravalli	N. Fork, Lost Horse	1062	8,598
USFS	Ravalli	Trapper Creek	1063	2,867
USFS	Ravalli	Nelson Lake	1064	3,233
USFS	Ravalli	Meadow Creek	M 1845	12,600
USFS	Ravalli	Swift Creek	1065	700
USFS	Ravalli	Needle Creek	1066	1,175
USFS	Ravalli	Selway-Bitterroot Addn.	S 188	12,700
USFS	Beaverhead	North Big Hole	B 1001	7,027
USFS	Deer Lodge	Storm Lake	1427	6,065
USFS	Granite	Quigg (Slide Rock)	Q 1807	60,050
USFS	Beaverhead	West Big Hole	I 1943	56,462
USFS	Beaverhead	East Pioneer (Torey Pk.)	1008	87,746
USFS	Madison, Gallatin	Lionhead	1963	20,899
USFS	Madison, Gallatin	Spanish Peaks	NF 920	63,300
USFS	Park	Republic Mountain (N. Absaroka Addition)	1545	480
USFS	Park	Reef (N. Absaroka Addition)	1914	427
USFS	Carbon	Lost Water	1362	9,500
USFS	Rosebud	Tongue River	1373	16,600
USFS	Missoula, Powell	Great Bear-Bob Marshall Scapegoat-Swan	B 1485	3,825
USFS	Powell, Lewis & Clark	Clearwater-Monture	Q 1485	65,385

* All Acreages Approximate.

E. Recommendations Pending Before Congress (all agencies) (Continued)

Agency	County(s)	Unit Name	Unit Number	Unit Acreage*
USFS	Lewis & Clark	Park Bridge	U 1485	3,255
USFS	Lewis & Clark	Renshaw	W 1485	25,649
USFS	Lewis & Clark	Leavitt Creek	T 1485	2,400
USFS	Lewis & Clark	Silverking Falls Creek	F 1485	38,300
USFS	Lewis & Clark	Big Log	W 1610	9,272
TOTAL USFS		Number of Areas 34		681,812

* All Acreages Approximate.

Agency	County(s)	Unit Name	Unit Number	Unit Acreage
USFWS	Garfield	East Seven Blackfoot	FW 923-1	12,184
USFWS	Phillips	Mickey Butte	FW 923-2	17,413
USFWS	Phillips, Valley	Burnt Lodge	FW 923-3	22,976
USFWS	Garfield	Billy Creek	FW 923-4	11,556
USFWS	Garfield	West Seven Blackfoot	FW 923-5	7,096
USFWS	Phillips	Antelope Creek	FW 923-6	5,382
USFWS	Garfield	West Hill Creek	FW 923-7	11,896
USFWS	Petroleum	Fort Musselshell	FW 923-8	8,303
USFWS	Garfield	Sheep Creek	FW 923-9	12,424
USFWS	Phillips	West Beauchamp	FW 923-10	6,736
USFWS	Garfield	Wagon Coulee	FW 923-11	10,528
USFWS	Petroleum	Alkali Creek	FW 923-12	6,592
USFWS	Petroleum	Crooked Creek	FW 923-13	6,842
USFWS	Garfield	East Hell Creek	FW 923-14	15,984
USFWS	Garfield	East Beauchamp	FW 923-15	5,568
TOTAL USFWS		Number of Areas 15		161,480

Agency	County(s)	Unit Name	Unit Number	Unit Acreage
NPS	Flathead, Glacier	Glacier	NP-915	917,600
NPS	Park, Gallatin	Yellowstone	NP-928	167,060
TOTAL NPS		Number of Areas 2		1,084,660

F. Other Agency Areas Under Study

Agency	County(s)	Unit Name	Unit Number	Unit Acreage*
USFS	Lincoln	Ten Lakes	1683	33,885
USFS	Lincoln	Mt. Henry	1666	21,000
USFS	Ravalli	Blue Joint Mt.	A 1941	61,400
USFS	Granite, Powell	Flint Range	1428	52,220
USFS	Granite, Powell	Dolus Lake	1429	9,100
USFS	Granite, Ravalli	Sapphires	1421	98,815
USFS	Teton	Deep Creek	P 1485	26,068
USFS	Teton	Reservoir North	H 1485	1,520
USFS	Beaverhead	West Pioneer	1006	147,992
USFS	Madison	Middle Mtn.-Tobacco Roots	B 1013	36,640
USFS	Jefferson, Broadwater	Bullock Hill	A 1620	59,980
USFS	Jefferson, Broadwater	Casey Peak	E 1620	25,000
USFS	Madison, Gallatin	Madison	N 1549	80,057
USFS	Gallatin	Madison	E 1549	105,760
USFS	Madison, Gallatin	Madison S.	S 1549	77,559
USFS	Madison, Gallatin	Madison	R 1549	32,640
USFS	Gallatin, Park	Gallatin Divide	G 1548	81,582
USFS	Gallatin, Park	Hyalite	H 1548	22,268
USFS	Beaverhead	Mt. Jefferson	1962	4,600
USFS	Fergus, Golden Valley	Big Snowies	A,B,S 1739	95,861
USFS	Meagher, Judith Basin	Middle Fork Judith	1734	91,000
USFS	Beaverhead	Italian Peak	I 1945	12,996
USFS	Madison	Madison	J 1549	29,826
TOTAL USFS		Number of Areas 25		1,207,769

* All Acreages Approximate.

Agency	County(s)	Unit Name	Unit Number	Unit Acreage
NPS	Big Horn	Big Horn Canyon		7,645
TOTAL NPS		Number of Areas 1		7,645

G. Ecosystem/Landform Representations of Areas Recommended in this Report

Unit Number	Ecosystem/Landforms Represented by Unit Name: Gramma/Needle-grass/Wheatgrass No. 057 Unit Name	Number of Existing Representations in Statutory Wilderness						Number of Representations in Wilderness Endorsed by the President					
		State		Region		NWPS		State		Region		NWPS	
		BLM	Other Agency	BLM	Other Agency	BLM	Other Agency	BLM	Other Agency	BLM	Other Agency	BLM	Other Agency
MT-067-212	Twin Coulee (1) suitable recommendations	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	(2) unsuitable recommendations	11	1	11	1	11	1	N/A	15	11	15	11	15
MT-067-206	Pryor Mountain (1) suitable recommendations	N/A	2	N/A	2	N/A	2	N/A	5	N/A	5	N/A	5
	(2) unsuitable recommendations	N/A	2	N/A	2	N/A	2	N/A	5	N/A	5	N/A	5
MT-067-205	Burnt Timber Canyon (1) suitable recommendations	N/A											
	(2) unsuitable recommendations	N/A											
MT-067-207	Big Horn Tack-on (1) suitable recommendations	N/A											
	(2) unsuitable recommendations	N/A											

H. Population Centers Within One Day's Travel of Areas Recommended in This Report

Unit Number	Population Centers Within One Day's Driving Time of Unit Names of Cities and States	Number of Statutory Wilderness Areas Within One Day's Drive of Identified Population Centers		No. of Wilderness Areas Endorsed by the President Within One Day's Drive of Identified Population Centers	
		BLM	Other Agency	BLM	Other Agency
		All units	Billings, Montana	N/A	11
	Great Falls, Montana	N/A	18	N/A	71
	Casper, Wyoming	N/A	18	N/A	35

Source: BLM, 1982

APPENDIX 3.9: METHODOLOGY FOR ASSESSING RANCH RELATED ECONOMIC IMPACTS

This appendix describes the methodology utilized for analyzing the direct effects of increases or decreases in grazing on ranch income and permit values in the RMP area. The impact on ranch income caused by changes in grazing for the 4 representative ranch types was determined through a linear programming model (See below). All income information is calculated from the average budgets developed for the model. Although the term "representative ranch" is used, the region has no real representative ranch. Each operation is unique. The impact on individual ranch income varies by the dependency on BLM grazing, the amount of the change in BLM grazing, the size of the operation, and the way the operator would adjust the ranch operation to changes in grazing.

The first step in the process involved matching each affected allotment in the EIS study area with the respective ranch operation. Some ranch operations have only one BLM grazing allotment, others have two allotments. There is a total of 43 individual ranch operations with BLM grazing privileges in the analysis. Through the use of BLM grazing records and personal knowledge of Billings Resource Area employees, the 43 ranches were placed in 4 size categories (Table 3.23). The predominate type of ranch is a cow/calf operation. Many of the operations also produce cash crops, primarily wheat and barley.

To determine dependency of ranches on BLM grazing, the total AUM grazing requirement for the ranches was computed. This was accomplished by multiplying 8.5 times the total estimated number of animal units (AUs) in each ranch. Eight and one-half was used because it is estimated that, on the average, ranch operations in the EIS study area graze eight and one-half months and feed hay and supplement the other three and one-half months. To determine the percentage of dependency of each operation on BLM grazing, the number of BLM AUMs permitted was divided by the total ranch AUM requirements. Table 3.23 summarizes these determinations: Percentage dependency = BLM AUMs divided by (8.5 months x number of ranch AUs).

The number of livestock on ranches within each size category was averaged. Ranch budgets were constructed for each of the four average herd sizes: 60, 170, 350, and 900.

The Economics and Statistics Service (USDA, ESS) developed the representative budgets, using, in part, budget data gathered in a national cost of production study in 1979. The budgets were originally developed for the Prairie Potholes EIS which covered northern Montana east of Glacier National Park. Tables 1 through 5 summarize the representative livestock budgets. A linear programming model was developed by ESS for each of four livestock sizes. The linear programming model maximizes ranch income based on a series of production parameters and constraints. To determine the economic impacts on the ranch, the level of BLM grazing was varied (increased or decreased) according to the proposed change in BLM AUMs under each alternative.

It was assumed that the most likely response of ranchers to changes in BLM AUMs would be to adjust the size of the ranch operation. It is, of course, very difficult to project how individual ranchers would adjust their operations given a change in BLM AUMs. Each ranch operation is unique, and the adjustment by each rancher to a change in BLM AUMs would probably vary somewhat. Small ranches would probably be less likely to reduce the size of their operations and would probably attempt to lease other grazing, for example, to compensate for the loss of BLM grazing. If BLM increased the number of AUMs, ranchers would not necessarily increase the size of their cow/calf operations. They might extend their grazing season, for example. Notwithstanding these problems, it was decided that adjusting the size of the cow/calf operations would represent the most likely response to a change in BLM AUMs.

The impact on ranch income is measured only in terms of change in the number of BLM AUMs. It is acknowledged that where an AMP is involved, there may be changes in ranch returns associated with the quality of grazing, watering facilities, etc., that do not directly relate to the change in quantity of AUMs. Through vegetation manipulation, fencing, water development, and rest rotation grazing on BLM land, a ranch operator could benefit from the production of heavier calves, an increase in the calf crop, and possibly even a reduction in death losses. Some of these benefits have been noted by W. Gordon Kears (1973) and Kothmann (1970). It is entirely possible that a range operator, even though he reduces the size of his herd, could end up selling more pounds of beef in the fall because of the benefits from implementation of an AMP. Not enough data are available at this time in the study area to conclusively quantify the extent of these additional ranch returns due to AUM quality so they were not evaluated in the analysis.

Implementation of grazing systems would increase the cost to ranch operations in such areas as increased fence maintenance, more movement of livestock and increased effort in monitoring forage conditions. These costs are included in the budget models.

Using the linear programming model, then, the change in ranch income (gross receipts above cash costs and depreciation), was calculated given a change in BLM AUMs. Since, in the study area, private and state lands are intermingled with BLM lands, a reduction in BLM grazing can cause a reduction in private and state grazing. During the time that BLM lands are being grazed, BLM lands contribute on the average about two-thirds of the grazing whereas state and private lands contribute about one-third. Therefore, in the calculations, grazing on state and private lands are reduced proportionally. Increase in BLM AUMs is not accompanied with a proportional increase in state and private AUMs since BLM does not know that grazing would be increased on these lands. Tables 6 through 9 summarize the income increases/decreases giving various increases/decreases in BLM AUMs.

Ranchers, BLM appraisers and the Federal Land Bank estimate that an average value for BLM grazing permits in the intensive study area is approximately \$100 per AUM. For those ranchers that have purchased BLM permits at \$100 per AUM or \$1,200 per AU, it is possible to calculate the price they are paying for BLM AUMs. Using an opportunity cost of capital of 9.3%, the cost of owning the BLM permit is \$9.30 per AUM. Adding the grazing fee of \$2.36 results in a total price per AUM of \$11.66.

The economic analysis uses average livestock prices for 1977, 1978 & 1979. Cost figures are for 1979. Historically, livestock prices have changed dramatically every three to five years, whereas production costs have risen consistently. A point could be raised as to the validity of using these figures to project economic impacts into the future. It has been assumed in this analysis that the cost/price relationship would remain fairly constant over the long term, with upward pressure on both costs and prices due to economy-wide inflation. Therefore, although the magnitude of the figures will increase the relative impact would remain constant.

Source: BLM, 1982

APPENDIX 4.1: METHODOLOGY FOR GRAZING MANAGEMENT

1. Vegetation Allocation - Initial allocations in the Existing, High and Preferred Alternatives are the current stocking rate. In "I" allotments, the stocking rate would be verified or adjusted based on monitoring of actual use and utilization together with data from the soil and vegetation inventory. The objective of monitoring would be to arrive at a stocking level where 50% of the forage produced in an average year would not be utilized. This level of grazing allows for plant maintenance and improvement under a planned system of grazing management.

All calculations for AUM increases are from SCS stocking guides (SCS Montana Grazing Guides, Zocek et al., undated). Range site and condition data from the inventory area (which included the Pryor Mountain Wild Horse Range and allotments where management actions are proposed) was used to determine current grazing capacities for each inventoried allotment (See Appendix 3.1 for details of grazing management responses of the various range sites). This information developed by range conservationists and soil scientists was used to determine the acres that would improve in condition and from the acreage improved, the increased AUMs were determined using the SCS grazing capacities for the range sites.

The calculation process is summarized below.

- a. Delineate range sites.
- b. Assign ecological condition to each site.
- c. Determine acres that have a slow or extremely slow response to grazing management because of soil limitations.
- d. Determine acres with slow or extremely slow response time because of poor vegetative condition.
- e. Calculate SCS stocking rate for each range site by precipitation zone and condition.
- f. Add up acres that would improve one condition class in the long term and determine the SCS recommended rate at the improved level of range condition.
- g. For burning and chiseling projects, condition calculations were based on changes from poor and low-fair condition to high-good and excellent condition. At least a doubling of forage production occurs with this improvement in range condition. AUM calculations for crested wheatgrass renovations were simply doubling of current AUMs.

2. Grazing Treatments - Grazing treatments and systems would vary depending on the allotment situation and management needed to reach resource objectives of an alternative. The objectives of the High Level and Preferred Alternatives emphasize improvement of key use areas. Such improvement would only result from systematic deferment and/or rest treatments and in some cases, vegetation manipulation practices.

3. Vegetation Manipulation Treatments - All such treatments would be coordinated with the Montana Department of Fish, Wildlife and Parks according to interagency agreement. Grazing management practices would allow for establishment and maintenance of treated areas.

The following guide has been developed by BLM Soil Scientists, and other specialists, for use on Montana and Dakota public lands.

Mechanical treatments may be considered as an alternative method of increasing vegetative production and improving watershed condition. Treatment feasibility should be considered where grazing management systems cannot reach desired goals in a realistic time.

Factors in influencing feasibility of treatments are: (1) soil properties, (2) existing plant community; (3) objectives of treatment, (4) anticipated response from treatment, (5) economics, (6) availability of equipment and (7) conditions that influence operation of equipment.

The objectives of mechanical treatment should be carefully analyzed. It may be desirable to: (1) change existing vegetation (i.e., reduce clubmoss-blue grama dominance) and/or (2) correct a soil problem (i.e., breakup a claypan or a compacted layer). Vegetation can be changed to improve range condition or to maximize production. Treatment should be selected to best reach the desired objective.

When it has been determined that management of livestock cannot reach the desired improvement in vegetation, suitability for mechanical treatment can be determined by considering: (1) soil properties and (2) conditions that influence operation of equipment. To use the table, first consider each factor in the left column independent of others, than consider interrelated factors to reach a final rating. These are evaluated in the following table.

Relevant conditions not evaluated in the table must also be considered. For example, kinds of bedrock (i.e., consolidated, fractured, etc.) will influence suitability for mechanical treatments. Aspect will influence the amount of moisture available for plant use.

Treatment effect upon water infiltration and runoff is an important consideration. Many treatments will increase infiltration and reduce runoff; but, less runoff may not be desirable in cases where downstream use of water has a higher priority.

In addition to the foregoing interpretation guide on the suitability of soils and related factors for rangeland mechanical treatment, it may be helpful to consider the selection of land treatment according to range sites.

The following table shows the type of treatment (mechanical, burning or chemical) suited to correct common soil or vegetation problems found on certain range sites. Where two or more vegetation or soil problems are present (dense sagebrush on claypan soils) select the treatment that will solve both problems; the claypan problem can't be reduced just by burning sagebrush. Range sites not shown in the table are generally unsuited to mechanical treatments.

Note that vegetative changes can be accomplished with fire, chemicals or a surface layer treatment (i.e., chiseling) but to correct a subsoil problem may require a deeper treatment (i.e., furrowing or ripping).

Additional factors must be considered to determine the final suitability of a site for mechanical treatment. These factors are in the foregoing section on rating soils properties and related factors. The narrative discusses objectives of a treatment.

Finally, land treatments cannot be considered an alternative to good management practices, but will require a high level of management following the treatments.

APPENDIX 4.1: METHODOLOGY FOR GRAZING MANAGEMENT (Continued, Page 2)

- A. Sagebrush burning - See Appendix 4.9 (Methodology for Controlled Burns).
- B. Mechanical treatments of blue grama sites - Chiseling and discing are proposed methods to break up blue grama sod. These treatments would be done generally on the contour on slopes less than 12%. Treated areas would be large enough to manage as a unit to insure even utilization. Roads and trails would not be disturbed and reservoir watershed areas would not be treated where such treatment would cause the reservoir to dry up.
- C. Crested wheatgrass interseeding - Interseeding of alfalfa is proposed for some crested wheatgrass areas. This could be accomplished by contour furrowing, contour scalping, or chiseling with interseeding. Such treatments would greatly increase the productivity of poor crested wheatgrass stands. Treated areas would be large enough to manage as a unit. Roads and trails would not be disturbed, and reservoir watershed areas would not be treated where such treatment would cause the reservoir to dry up.
- D. Noxious weed control - Noxious weed control would be done under the supervision of a certified pesticide applicator in accordance with all applicable standards and requirements established by Federal and State regulatory agencies for the use of the pesticides.

4. Facilities

- A. Fences - Fences would be 3 or 4 wire (barbed) antelope type fence, in accordance with BLM Manual 1737.
 - B. Water sources - Wells, springs, pipelines, water savers, reservoirs and pits are the various water sources that could be developed. As a general guide, water source per section would be provided.
- All newly constructed watering sources for livestock will be modified for use by wildlife. All new reservoirs will be evaluated for the potential installation of waterfowl nesting islands.

Source: BLM, 1982

APPENDIX 4.2: METHODOLOGY FOR RATING GRAZING MANAGEMENT RESPONSE

These guidelines rate the potential speed of vegetative response, in different soil groupings, resulting from effective livestock management systems. They may be used by range conservationists and other specialists to develop AMP objectives based on soil potentials, provide the needed information for benefit/cost analyses, which are of particular concern under the new Rangeland Improvement Policy. The response ratings are based on BLM and SCS soil scientists' knowledge of the soils of Montana and range conservationists' experience with monitoring AMPs.

Rates of response are defined as follows:

- Rapid - Significant improvement in 3 to 5 years.
- Moderate - Will improve to next condition class in 5 to 15 years.
- Slow - Minor improvement in 15 years.
- Extremely slow - No significant improvement in 15 years.

Soil factors affecting response are texture, structure, flooding frequency and duration, drainage class, soluble salts, sodium adsorption ratio, coarse fragments, slope, and topography. Other factors affecting response are varying climatic conditions, the type of grazing animal, distribution, season of use, grazing system, present and desired vegetative type, and range condition.

These management response ratings may be amended (up or down) due to site-specific factors. For example, response will be slower where vegetation such as blue grama, clubmoss, dense sagebrush, or woodland canopy is present. These limiting factors can reduce the expected response by one or more categories. Range in poor condition will normally respond more slowly than that in fair or good condition due to low vigor, and lack of seed source. If the site is in excellent condition ground cover, production, and vigor can increase. Knowledge of local map units and vegetation will be required to make these choices.

The following are descriptions of the varying soil characteristics and range sites that determine the rate of vegetative response. Because of variations in soil characteristics within range sites, a number of range sites are designated in more than one response category. It may be necessary to have the assistance of a soil scientist to make the correct determination in these cases.

Rapid vegetative response:

1. All soils receiving common flooding of brief or long duration; well drained to very poorly drained soils with soluble salts less than 8 mmhos per centimeter (mmhos), and in poor or excellent range condition. This group includes soils in the wet meadow, subirrigated, saline lowland, and overflow range sites.
2. Sand and loamy sand textures; single grain or weak blocky or weak prismatic structure; in fair to excellent range condition. This group is the sands range site.
3. Clay, silty clay, and sandy clay textures, granular surface and blocky or prismatic subsoil; soluble salts less than 4 mmhos, sodium adsorption ratio (SAR) less than 4; in fair to excellent range condition, except when dense sagebrush limits grass seedling establishment. Included in this group are soils in the clayey, thin clayey, coarse clay, and shallow clay range sites.

Moderate vegetative response:

1. Deep and moderately deep soils with fine sandy loam surface layers; soluble salts less than 4 mmhos and SAR less than 4. This is the sandy range site.
2. Deep and moderately deep soils with loam surface layers and loamy or clayey subsoils, of moderate permeability and salts less than 4 mmhos and SAR less than 4. If dominated by blue grama or blue grama-clubmoss, response will be slow. This is the silty range site.
3. Deep, clayey soils on fans and low terraces with a very thin (1/2-2 inches thick) loamy surface (the A1 layer). Response will be slow when these soils are dominated by sagebrush and/or blue grama. Includes some soils in the clayey range site.
4. Strongly calcareous, loamy or loamy-skeletal soils on terraces and fans with low or moderate available water of 3.75 to 7.5 inches per 5 foot profile, or to limiting layer. Included in this group are soils in the silty-stony and shallow to gravel range sites.
5. Shallow to deep calcareous soils on moderately steep to steep landscapes with loamy or clayey texture. Included in this group are soils in the thin sandy, thin silty, thin clayey, shallow, and shallow clay range sites.

Slow vegetative response:

1. Claypan soils with very thin loamy surface layer (<5 inches thick) over dense claypan subsoil; moderately well drained with soluble salts between 4 and 16 mmhos and SAR 8 to 12. This includes soils in the claypan range site.
2. Claypan soils with loamy surface layers (<8 inches thick) and clayey columnar subsoils, on well drained landscapes. This includes soils in the claypan range site.
3. Clay or silty clay soils with soluble salts between 8 and 12 mmhos, SAR 8 to 12 on well drained landscapes. Much of the area may have massive structure in the surface layer. This includes soils in the dense clay and saline upland range sites.
4. Very gravelly and extremely gravelly loamy soils with very low available water capacity of less than 3.75 inches of water in a 5 foot profile. This is the gravel range site.
5. Very strongly calcareous loamy or loamy-skeletal soils with low fertility. This group includes soils in the clayey-limy, silty-limy shallow-limy and very shallow-limy range sites.

Extremely slow vegetative response:

1. Fine and moderately fine textured surface with massive structure. This includes some soils in the dense clay range sites.
2. All soils with salts exceeding 16 mmhos and/or SAR above 12; well drained or moderately well drained. This includes some soils in the saline upland range site.

Note: The badlands, panspots, thin breaks, limy, and shale range sites refer to landscapes and not soils. Base response projections on component soils in these areas.

Source: BLM, 1982

TABLE 1

Cost and Return Summary with interest on land as a cash cost

Item	Herd Size			
	60	170	350	900
Gross Income	16,909	48,082	98,332	252,672
Total Cash Costs*	12,279	32,753	64,804	164,120
Family Labor	2,341	5,464	12,000	17,028
Return Above Cash Costs	4,630	15,329	33,528	88,552
Return Above Cash Costs & Family Labor	2,289	9,865	21,528	71,524
Return to Total Investment ^{1/}	505	5,198	12,501	48,263
Return to Land ^{2/}	-3,250	-5,113	-8,409	-5,521

*includes interest on real estate loan based on \$500/AU and interest at 9.3%

^{1/} Return Above Cash Cost & Family Labor minus depreciation

^{2/} Return to Total Investment minus interest on Investment other than Land

Source: ESS, 1980.

TABLE 2

Representative Ranch Budget			0-100 Cows		Total Value
Unit	Number	Average Weight	Price/Cwt	Total Value	
Sales:					
Steer Calves	Head	24	450	71.23	7,693
Heifer Calves	Head	15	410	62.82	3,863
Feeder Steers	Head	3	725	59.02	1,284
Cull Cows	Head	11	1,000	36.99	4,069
Total					16,909
Total/Cow					281.82
Cash Costs:					
			Total Value	Value/Head	
BLM Permit			301	5.02	
State Lease			30	.50	
Private Lease			648	10.80	
Grazing Association			90	1.50	
Hay (Prod)			2,944	49.07	
Hay (Purch)			539	8.98	
Barley (Prod)			94	1.57	
Protein Supp.			173	2.88	
Salt & Minerals			160	2.66	
Vet. & Medicine			317	5.29	
Trucking			98	1.64	
Marketing			266	4.44	
Hired Labor			149	2.49	
Machine Fuel & Labor			855	14.25	
Machine Repair			800	14.67	
Equipment Fuel & Lube			146	2.44	
Equipment Repair			185	3.09	
Land Tax			499	8.31	
Other Tax			108	1.80	
Insurance			94	1.56	
General Farm Overhead			491	8.18	
Interest on Oper. Capital			422	7.03	
Total			9,489	158.15	
Other Costs:					
Family Labor			2,341	39.02	
Depreciation			1,784	29.73	
Interest on Investment other than Land			3,755	62.58	
Interest on Land Investment			10,091	168.18	
Total			17,971	299.51	
Total all Costs			27,460	457.66	
Return above Cash Costs			7,420	123.67	
Return above Cash Costs & Family Labor			5,079	84.65	
Return to Total Investment			3,295	54.92	
Return to Land Investment			-460	-7.67	

Production Assumptions: Herd size 60 cows; 95% calf crop; 5% calf death loss to weaning; 25 cows per bull; 20% replacement rate; 2% cow loss.

Source: ESS, 1980.

TABLE 3

Representative Ranch Budget

101-249 Cows

Unit	Number	Average Weight	Price/Cwt	Total Value
Steer Calves	69	450	71.23	22,117
Heifer Calves	43	410	62.82	11,075
Feeder Steers	8	725	59.02	3,423
Cull Cows	31	1,000	36.99	11,467
Total				48,082
Total/Cow				282.84

Representative Ranch Budget

250-499 Cows

Unit	Number	Average Weight	Price/Cwt	Total Value
Steer Calves	142	450	71.23	45,513
Heifer Calves	88	410	62.82	22,666
Feeder Steers	16	725	59.02	6,847
Cull Cows	63	1,000	36.99	23,304
Total				98,330
Total/Cow				280.93

Sales:

Steer Calves	Head	142	450	71.23	45,513
Heifer Calves	Head	88	410	62.82	22,666
Feeder Steers	Head	16	725	59.02	6,847
Cull Cows	Head	63	1,000	36.99	23,304

Cash Costs:

BLM Permit	722	4.25	3,079
State Lease	39	8.37	326
Private Lease	248	1.46	362
Grazing Assoc.	8,384	49.32	413,600
Hay (Prod)	1,576	9.27	14,612
Hay (Purch)	266	1.57	418
Barley (Prod)	490	2.88	1,411
Protein Suppl	451	2.65	1,195
Salt & Minerals	903	5.31	4,799
Vet. & Medicine	332	1.95	648
Trucking	697	4.10	2,868
Marketing	746	4.39	3,275
Hired Labor	1,513	8.90	13,466
Machine Fuel & Lube	1,338	7.87	10,530
Machine Repair	253	1.49	377
Equipment Fuel & Lube	502	2.95	1,481
Equipment Repair	1,464	8.61	12,611
Land Tax	262	1.54	403
Other Tax	723	4.25	3,073
Insurance	1,255	7.38	9,261
General Farm Overhead	1,262	7.42	9,317
Interest on Oper. Capital	24,848	146.17	3,631,000
Total			14,848,000

Other Costs:

Family Labor	5,464	32.14	176,400
Depreciation	4,667	27.45	128,000
Interest on Investment other than Land	10,311	60.65	615,000
Interest on Land Investment	34,005	200.03	680,000
Total	54,447	320.27	1,750,000
Total all costs	79,295	466.44	1,750,000
Return above Cash Costs	23,234	136.67	1,750,000
Return above Cash Costs & Family Labor	17,770	104.53	1,750,000
Return to Total Investment	13,103	77.08	1,750,000
Return to Land Investment	2,792	16.42	1,750,000

Production Assumptions - herd size 170 cows; 95% calf crop; 5% calf death loss to weaning; 25 cows per bull; 20% replacement rate; 2% cow loss.

Source: ESS, 1980.

TABLE 4

Representative Ranch Budget

250-499 Cows

Unit	Number	Average Weight	Price/Cwt	Total Value
Steer Calves	142	450	71.23	45,513
Heifer Calves	88	410	62.82	22,666
Feeder Steers	16	725	59.02	6,847
Cull Cows	63	1,000	36.99	23,304
Total				98,330
Total/Cow				280.93

Sales:

Steer Calves	Head	142	450	71.23	45,513
Heifer Calves	Head	88	410	62.82	22,666
Feeder Steers	Head	16	725	59.02	6,847
Cull Cows	Head	63	1,000	36.99	23,304

Cash Costs:

BLM Permit	1,856	5.30	9,915
State Lease	222	.63	140
Private Lease	819	2.34	1,916
Grazing Assoc.	510	1.46	745
Hay (Prod)	17,450	49.86	870,000
Hay (Purch)	3,203	9.15	29,307
Barley (Prod)	545	1.56	850
Protein Suppl	1,009	2.88	2,906
Salt & Minerals	945	2.70	2,572
Vet. & Medicine	1,676	4.79	8,028
Trucking	473	1.35	639
Marketing	592	1.69	1,000
Hired Labor	3,262	9.32	30,300
Machine Fuel & Lube	2,331	6.66	15,500
Machine Repair	2,335	6.67	15,550
Equipment Fuel & Lube	585	1.67	977
Equipment Repair	1,047	2.99	3,110
Land Tax	2,919	8.34	24,300
Other Tax	473	1.35	639
Insurance	1,470	4.20	6,170
General Farm Overhead	2,342	6.69	15,600
Interest on Oper. Capital	2,465	7.04	21,300
Total	48,529	138.65	1,750,000

Other Costs:

Family Labor	12,000	34.29	411,000
Depreciation	9,027	25.79	231,000
Interest on Investment other than Land	20,910	59.74	1,515,000
Interest on Land Investment	69,034	197.24	1,380,000
Total	110,971	317.06	1,750,000
Total all costs	159,500	455.71	1,750,000
Return above Cash Costs	49,803	142.29	1,750,000
Return above Cash Costs & Family Labor	37,803	108.01	1,750,000
Return to Total Investment	28,776	82.22	1,750,000
Return to Land Investment	7,866	22.47	1,750,000

Production Assumptions - herd size 350 Cows; 95% Calf Crop; 5% calf death loss; 20 cows per bull; 20% replacement rate; 2% cow loss.

Source: ESS, 1980.

TABLE 5

Representative Ranch Budget				500+ Cows	
Unit	Number	Average Weight	Price/Cwt	Total Value	Total Value
Sales:					
Steer Calves	365	450	71.23	116,995	
Heifer Calves	226	410	62.82	58,209	
Feeder Steers	41	725	59.02	17,544	
Cull Cows	162	1,000	36.99	59,924	
Total				252,672	
Total/Cow					280.75
Cash Costs:					
BLM Permit				3,727	4.14
State Lease				202	.22
Private Lease				1,278	1.42
Grazing Association				1,305	1.45
Hay (Prod)				44,774	49.75
Hay (Purch)				8,239	9.15
Barley (Prod)				1,410	1.57
Protein Supp.				2,595	2.88
Salt & Minerals				2,430	2.70
Vet. & Medicine				4,311	4.79
Trucking				1,215	1.35
Marketing				1,521	1.69
Hired Labor				8,388	9.32
Machine Fuel & Lube				5,994	6.66
Machine Repair				6,003	6.67
Equipment Fuel & Lube				2,691	2.99
Equipment Repair				1,503	1.67
Land Tax				7,506	8.34
Other Tax				1,215	1.35
Insurance				3,780	4.20
General Farm Overhead				6,021	6.69
Interest on Oper. Capital				6,212	6.90
Total				122,320	135.91
Other Costs:					
Family Labor				17,028	18.92
Depreciation				23,211	25.79
Interest on Investment other than Land				53,784	59.76
Interest on Land Investment				208,008	231.12
Total				302,031	335.59
Total all Costs				424,351	471.50
Return above Cash Costs					
Return above Cash Costs & Family Labor				130,352	144.84
Return to Total Investment				113,324	125.92
Return to Land Investment				90,113	100.13
Return to Land Investment				36,329	40.37

Production Assumptions - Herd size 900 cows; 95% calf crop; 5% calf death loss to weaning; 20 cows per bull; 20% replacement rate; 2% cow loss.

Source: ESS, 1980.

TABLE 6

TABLE 6-- Ranch Income Decreases less than 100 cows

Item	Percent reduction										
	no change	5	10	15	20	25	30	35	40	45	50
	<u>Dollars</u>										
Gross income	16,974	16,596	16,214	15,837	15,457	15,075	14,673	14,294	13,911	13,534	13,187
Total cash costs	12,355	12,071	11,785	11,502	11,217	10,969	10,722	10,488	10,252	10,019	9,807
Value of family labor	2,350	2,298	2,245	2,195	2,140	2,087	2,032	1,979	1,926	1,874	1,826
Depreciation	1,785	1,777	1,769	1,761	1,753	1,745	1,736	1,729	1,721	1,712	1,705
Interest on investment other than land	3,767	3,698	3,628	3,560	3,490	3,421	3,348	3,279	3,209	3,141	3,078
Return above:											
Cash costs	4,619	4,525	4,429	4,335	4,240	4,106	3,951	3,806	3,659	3,515	3,380
Cash costs and family labor	2,269	2,227	2,184	2,142	2,100	2,019	1,919	1,827	1,733	1,641	1,554
Return to total investment	484	450	415	381	347	274	183	99	12	71	151
Return to land	-3,283	-3,248	-3,213	-3,179	-3,143	-3,147	-3,165	-3,190	-3,197	-3,212	-3,229
Herd size	60.2	58.9	57.5	56.2	54.8	53.5	52.1	50.7	49.4	48.0	46.8

Source: ESS, 1980.

TABLE 6 --(cont)

Ranch Income Increases less than 100 cows

Item	Percent Increase		
	5	10	15
	<u>Dollars</u>		
Gross income	17,304	17,638	17,969
Total cash costs	12,636	12,921	13,204
Value of family labor	2,396	2,442	2,488
Depreciation	1,792	1,800	1,807
Interest on investment other than land	3,827	3,888	3,948
Return above:			
Cash costs	4,668	4,717	4,765
Cash costs and family labor	2,272	2,275	2,277
Return to total investment	480	475	470
Return to land	-3,347	-3,413	-3,478
Herd size	61.4	62.6	63.8

Source: ESS, 1980.

TABLE 7 -- Ranch Income Decreases 100-249 cows

Item	Percent reduction										
	no change	5	10	15	20	25	30	35	40	45	50
	<u>Dollars</u>										
Gross income	47,939	47,078	45,967	45,067	44,143	43,243	42,343	41,208	40,308	39,384	38,484
Total cash costs	32,700	32,093	31,303	30,666	30,013	29,376	28,843	28,190	27,673	27,144	26,628
Value of family labor	5,448	5,350	5,223	5,122	5,017	4,914	4,812	4,683	4,581	4,476	4,374
Depreciation	4,664	4,645	4,622	4,603	4,584	4,564	4,545	4,521	4,502	4,483	4,463
Interest on investment other than land	10,286	10,132	9,932	9,771	9,605	9,444	9,282	9,079	8,918	8,752	8,591
Return above:											
Cash costs	15,239	14,985	14,664	14,401	14,130	13,867	13,500	13,018	12,635	12,240	11,856
Cash costs and family labor	9,791	9,635	9,441	9,279	9,113	8,953	8,688	8,335	8,054	7,764	7,482
Return to total investment	5,127	4,990	4,819	4,676	4,529	4,389	4,143	3,814	3,552	3,281	3,019
Return to land	-5,159	-5,142	-5,113	-5,095	-5,076	-5,055	-5,139	-5,265	-5,366	-5,471	-5,572
Herd size	169.9	166.5	162.5	159.4	156.1	152.9	149.7	145.7	142.5	139.3	136.1

Source: ESS, 1980.

TABLE 7 --(cont) Ranch Income Increases 100-249 cows

Item	Percent Increase		
	5	10	15
	<u>Dollars</u>		
Gross income	48,756	49,500	50,244
Total cash costs	33,366	33,973	34,580
Value of family labor	5,541	5,625	5,710
Depreciation	5,681	4,697	4,713
Interest on investment other than land	10,432	10,566	10,699
Return above:			
Cash costs	15,390	15,527	15,664
Cash costs and family labor	9,849	9,902	9,954
Return to total investment	4,168	5,205	5,241
Return to land	-6,264	-5,361	-5,458
Herd size	172.4	175.0	177.7

Source: ESS, 1980.

TABLE 8 -- Ranch Income Decreases 250-499 Cows

Item	Percent reduction										
	no change	5	10	15	20	25	30	35	40	45	50
	Dollars										
Gross income	98,249	96,727	93,930	91,573	89,401	87,253	85,106	82,934	80,577	78,405	76,258
Total cash costs	64,740	63,661	61,665	59,984	58,441	57,086	55,846	54,598	53,236	51,987	50,747
Value of family labor	11,991	11,806	11,464	11,176	10,911	10,649	10,387	10,122	9,834	9,569	9,307
Depreciation	9,025	8,984	8,909	8,847	8,789	8,731	8,674	8,616	8,553	8,495	8,438
Interest on investment other than land	20,895	20,619	20,113	19,687	19,294	18,905	18,516	18,123	17,697	17,304	16,915
Return above:											
Cash costs	33,509	33,066	32,265	31,589	30,960	30,167	29,260	28,336	27,341	26,418	25,511
Cash costs and family labor	21,518	21,260	20,801	20,413	20,049	19,518	18,873	18,214	17,507	16,849	16,204
Return to total investment	12,493	12,276	11,892	11,566	11,260	10,787	10,199	9,598	8,954	8,354	7,766
Return to land	-8,402	-8,343	-8,221	-8,121	-8,034	-8,118	-8,317	-8,525	-8,743	-8,950	-9,149
Herd size	349.7	344.2	334.3	325.9	318.2	310.6	302.9	295.2	286.8	279.1	271.4

Source: ESS, 1980.

TABLE 8. (cont.) Ranch Income Increases 250-499 Cows

Item	Percent Increase		
	5	10	15
	Dollars		
Gross income	100,210	102,171	104,378
Total cash costs	66,343	67,946	69,749
Value of family labor	12,231	12,470	12,739
Depreciation	9,077	9,129	9,198
Interest on investment other than land	21,250	21,605	22,004
Return above:			
Cash costs	33,367	34,225	34,829
Cash costs and family labor	22,636	21,755	21,890
Return to total investment	12,559	12,626	12,702
Return to land	-8,691	-8,979	-9,302
Herd size	356.7	363.7	371.5

Source: ESS, 1980.

TABLE 9 -- Ranch Income Decreases 500+ Cows

Item	Percent reduction										
	no change	5	10	15	20	25	30	35	40	45	50
	<u>Dollars</u>										
Gross income	252,200	247,067	242,079	236,884	231,920	226,932	221,736	216,749	211,553	206,566	201,394
Total cash costs	163,916	160,288	156,766	153,093	149,587	146,065	143,085	140,240	137,272	134,427	131,473
Value of family labor	16,996	16,650	16,313	15,963	15,629	15,293	14,943	14,606	14,256	13,920	13,572
Depreciation	23,198	23,061	22,928	22,789	22,656	22,523	22,384	22,251	22,112	21,979	21,841
Interest on investment other than land	53,697	52,767	51,863	50,922	50,023	49,119	48,178	47,275	56,333	45,430	44,493
Return above:											
Cash costs	88,284	86,779	85,313	83,791	82,333	80,867	78,651	76,509	74,281	72,139	69,921
Cash costs and family labor	71,288	70,129	69,000	67,828	66,704	65,574	63,708	61,903	60,025	58,219	56,349
Return to total investment	48,090	47,068	46,072	45,039	44,048	43,051	41,324	39,652	37,913	36,240	34,508
Return to land	-5,607	-5,699	-5,791	-5,883	-5,975	-6,068	-6,854	-7,623	-8,420	-9,190	-9,995
Herd size	898.3	880.0	862.2	843.7	826.0	808.3	789.8	772.0	753.5	735.7	717.3

Source: ESS, 1980.

TABLE 9 --(cont) Ranch Income Increases 500+ Cows

Item	Percent Increase		
	5	10	15
	<u>Dollars</u>		
Gross income	256,194	260,359	264,279
Total cash costs	167,182	170,588	173,794
Value of family labor	17,265	17,545	17,809
Depreciation	23,305	23,416	23,521
Interest on investment other than land	54,420	55,175	55,885
Return above:			
Cash costs	89,012	89,771	90,485
Cash costs and family labor	71,747	72,226	72,676
Return to total investment	48,442	48,810	49,155
Return to land	-5,978	-6,365	-6,730
Herd size	912.5	927.3	941.3

Source: ESS, 1980.

APPENDIX 4.3: METHODOLOGY FOR WILD HORSE MANAGEMENT

Monitoring

Habitat

A monitoring plan will be developed to assure the objectives of the RMP and Herd Area Management Plan (HAMP) are being accomplished. Coordinated monitoring will take place to measure the compatibility of wild horses, mule deer, bighorn sheep, and the effects of management practices on each of their habitats.

The methods utilized will be established practices for collecting information to determine habitat condition and the trend of condition. These methods will be applied according to established standards contained in BLM Manual sections 4400 and 6600.

Wild Horses

Information will continue to be collected on the population numbers and social structure. This will be done by separate herd area. The information will be collected primarily by visual observation, recorded and filed in the Billings Resource Area Office's central files system, section 4700.

Range Improvements

Fences

Constructed fences will be built to minimize the effects on movement of wildlife. The five miles of boundary fence would be a standard five wire (barbed) fence with steel and wood posts. Internal cross fences and wing fences would be a three wire (barbed) with steel and wood posts. The spacing on the wire, measured from the ground up, would be 24 inches, 12 inches, and 12 inches. Fences will be built in accordance with BLM Manual 1737.

An effort will be made to locate all internal fences so minimal visual detracton occurs.

All wild horse range improvements proposed for installation within the recommended wilderness areas in the Pryor Mountains will undergo a wilderness clearance by range and wilderness specialists prior to installation.

Water

Watersavers, also known as artificial catchments, are the basic method to improve the water supply on the PMWHR.

The watersavers will be installed so access to water by wild horses can be controlled. This will provide an opportunity to obtain better grazing distribution by wild horses and seasonal defement of grazing to improve range condition.

The installation of the watersavers will be designed so wildlife can have access to water when water is not available to wild horses, if this is a management objective.

Source: BLM, 1982

Monitoring - Terrestrial

Wildlife terrestrial habitat monitoring will be accomplished in close coordination with the range management monitoring program which assesses ecological range condition. Monitoring efforts are designed to provide wildlife habitat condition data, wildlife species occurrence and population trends. All monitoring and followup analysis will focus on key habitat areas and high population concentration areas.

Monitoring of big game habitats and high population concentration areas will be accomplished through the use of permanent vegetation transects (i.e., line-intercept; 3-step point transects; Daubermire transects), pellet group counts and ocular species observation counts. Species observation counts will be done in close coordination with the Montana Department of Fish, Wildlife and Parks (MDFW&P) and conducted both on the ground and with the use of aircraft.

Monitoring of upland game bird habitat will be accomplished through the use of permanent vegetation transects (i.e., line-intercept transects; Daubermire transects) located in wintering and nesting habitats adjacent to located mating grounds. Mating grounds will be located utilizing aerial photographs, ground and aerial observations and MDFW&P data.

Monitoring of waterfowl habitat and use will be accomplished through the use of permanent vegetative transects (i.e., Daubermire transects) and ocular species counts on selected reservoirs within known high concentration areas. Followup surveys for nesting success and brood numbers will be conducted on each selected reservoir in cooperation with the MDFW&P.

Monitoring for threatened and endangered species habitat and occurrence will be done in accordance with:

- A. Black-footed ferret: Montana Instruction Memorandum No. MT-81-163, Change 1 and BLM Technical Note, Habitat Management Series for Endangered Species, Report No. 2.
- B. Bald eagle: BLM Technical Note, Habitat Management Series for Endangered Species, Report No. 5.
- C. Peregrine falcon: BLM Technical Note, Habitat Management Series for Endangered Species, Report No. 1.

Monitoring of nongame mammal and bird habitats and species occurrence data will be collected in accordance with:

- A. Mammals: Department of Natural Resource publication, Circle West Wildlife Baseline Study, pp. 34-39.
- B. Birds: U.S. Fish and Wildlife Service publication FWS/OBS-80/58, Field Guidelines for Using Transects to Sample Nongame Bird populations.

All wildlife habitat data and population numbers collected will be recorded and filed in accordance with BLM Manual 6602 guidelines.

Monitoring - Aquatic

Monitoring of all aquatic habitats will be done in accordance with guidelines presented in BLM Technical Note No. 283, Techniques for Conducting Stream Habitat Surveys on National Resource Land and BLM manuals for reservoir and lake surveys.

(Copies of referenced manuals, studies, publications, instruction memorandums, and technical notes are located in the Resource Area Office.)

Structural Improvements

- A. Upland game bird watering devices: All watering devices will be constructed in accordance with designs and guidelines presented in the Wildlife Society, publication Wildlife Habitat Improvement Techniques, pp. 369-375.
- B. Waterfowl nesting islands: All islands will be constructed in accordance with guidelines presented in BLM Technical Notes Nos. 260 and 327; Waterfowl Nesting Island Development and Construction and Management of Stockponds for Waterfowl, respectively.
- C. Fencing: All fencing will be constructed in accordance with standards identified in BLM Manual 1737.
- D. Raptor nest sites: All raptor nest sites will be constructed in accordance with guidelines presented in BLM Technical Note #345, Raptor Management - the State of the Art in 1980.
- E. Fishing ponds: All ponds will be constructed in accordance with standards outlined in the Lewistown District Water Resources Programmatic Environmental Analysis Record, the Lewistown District Wildlife Development Projects Environmental Analysis Record and MDFW&P guidelines.

Non-Structural Improvements

Planting of all dense nesting cover that is proposed (25 acres) will be accomplished utilizing a broadcast procedure. The recommended seed mixture will be 2 pounds of dryland alfalfa and 10 pounds of tall and pubescent wheatgrass per acre.

Source: BLM, 1982

APPENDIX 4.5: METHODOLOGY OF TIMBER MANAGEMENT

All timber harvesting will be under the constraints of the Lewistown District Programmatic EAR on Small Sales of Forest Projects number MT-060-06-8-18. This document is on file in the Billings Resource Area Office.

Source: BLM, 1978

APPENDIX 4.6: METHODOLOGY USED TO DETERMINE IMPACTS TO VISUAL RESOURCES

Impacts to visual quality are determined through analysis of allowable management actions within the five visual management classes as they are defined in Bureau Manual 8400. Projects are analyzed in terms of their potential to create the following types of effects:

- A. Ground disturbance, including roads and trails constructed for access and/or maintenance of the project.
- B. Creation of structures not homogenous to the visual scene.
- C. Color changes which may occur from vegetative manipulations. This could be either removal of native vegetation or the introduction of additional non-native vegetation.
- D. Livestock concentration around reservoirs and other water sources and associated grazing impacts of compaction, trailing and erosion.

Each type of impact is evaluated as to whether or not it would create a high, moderate or low contrast if it were done in each one of the four visual class landscapes. High contrasts would be created by those landscape changes that demand attention. They could not be overlooked. The contrast would be inharmonious to the basic scenery elements of line, form, color and texture. High contrast projects could not meet management class objectives without mitigation.

Moderate contrasts would attract attention and dominate the landscape. A project that would create a moderate contrast could only meet Class III and IV management objectives without mitigation.

Low contrasts might or might not dominate the scene, but because of the quality of the scenery or the size and scope of the project, it would meet all of the management class objectives.

This analysis assumes that the projects would be viewed from the foreground (up to one mile). The impacts to visual class would be rated at the time of the projects if no special mitigating measures are applied. Over time, nature might mitigate the impacts through revegetation. Also, standard operating procedures would allow many projects to be accomplished within allowable visual class guidelines.

Source: BLM, 1982

GENERAL

Cultural resources constitute a BLM program in their own right, with the objective of managing them in a stewardship role for public benefit. To that end, the BLM Washington Office has issued instructions setting forth this management structure through a "use evaluation" system. The purposes of the system are for the analysis of scientific and socio-cultural values of cultural resources, to provide a basis for land use allocation of cultural resources and as an important part of cultural resource input to the planning system, and to identify information needed when existing documentation is inadequate to support a reasonable cultural resource-based land use allocation.

The evaluation of cultural resources requires the consideration of actual or potential use of individual sites or properties within five categories. These categories are:

1. **Socio-cultural Use.** This category refers to the use of an object (including flora and fauna), structure, or place based on a social or cultural group's perception that the object, etc., has utility in maintaining the group's heritage or its existence.
2. **Current Scientific Use.** This category refers to a study or project in progress at the time of evaluation for which scientists or historians are using a cultural resource as a source of information which will contribute to the understanding of human behavior.
3. **Management Use.** This category refers to use of a cultural resource by the BLM, or other entities interested in the management of cultural resources, to obtain specific information (other than basic inventory data) needed for the reasonable allocation of cultural resources or for the development of effective preservation measures. This category includes study plots allocated to examine specific impacts, deterioration, etc.
4. **Conservation for Future Use.** This category refers to the management of cultural resources by segregating them from other forms of appropriation until specific conditions are met in the future. Such conditions may include, but are not limited to, development of research techniques which are presently not available, or the exhaustion of all other resources similar to those represented in the protected sample. The category is intended to provide long-term, in-site preservation and protection of select cultural resources.
5. **Potential Scientific Use.** This category refers to the potential use of a cultural resource as a source of information which will contribute to the understanding of human behavior, utilizing research techniques currently available.

Sites that are rare and/or unique, that have research value, or are fragile or not prone to preservation due to impact from natural elements or man, may be considered by an Area Manager for cultural-based land use allocation. Sites types that are justifiable candidates for land use allocation per the aforementioned evaluation categories include, rockshelters and caves; vision quests; wooden structures; petroglyphs and pictographs; well preserved lithic scatters that contain temporal and functional information; topographic areas containing combinations of site types; and unusually large stone ring sites. Steamboat Butte Site; Petroglyph Canyon Site; Hangover Hollow Site; BLM Woodhut Site; Castle Butte Site; Spirit Spire Site; Marian's Shelter Site; Tillett Petroglyphs Site; Weatherman's Draw Site; Piney Creek Site; rockshelter sites in the Snowy Mountains; Bandit Site; Hoskins Basin National Historic District; Demijohn Flat National Historic District; and Skybird Castle Site are possible candidates for land use allocation within the resource area.

Land use allocation is also a facet of designation of an Area of Critical Environmental Concern. According to the Federal Land Policy and Management Act of 1976, an ACEC is an area "within the public lands where special management attention is required (when such areas are developed or use, or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards" (Sec. 103[a]).

The decision related to land use allocation and ACEC designation must be drawn from an approved activity plan. This is a written plan for a specific area of planning responsibility, a resource or a specific group of resources, which identifies cultural resource protection and use objectives, establishes the specific nature and sequences of actions to achieve objectives, and outlines procedures for evaluating accomplishments.

The authority for BLM's management of cultural resources is legally vested in:

The Act for the Preservation of American Antiquities, 1906 (34 Stat. 225);
 The Historic Sites Act, August 21, 1935;
 The National Historic Preservation Act, October 15, 1966 (80 Stat. 915), as amended (1980);
 National Register of Historic Places Regulations, 36 CFR 60;
 Advisory Council on Historic Preservation Regulations, 36 CFR 800;
 The Preservation of American Antiquities, 43 CFR, Part 3;
 National Environmental Protection Act, 1969;
 Executive Order 11593, May 13, 1971;
 Federal Land Policy and Management Act, 1976;
 BLM Manual 8111, March 6, 1978;
 American Indian Religious Freedom Act, 1978 (P.L. 95-341);
 Archaeological Resources Protection Act, 1979, Proposed Rules, January 19, 1981;
 Treatment of Archaeological Properties, A Handbook, Advisory Council on Historic Preservation, November 1980;
 And numerous pertinent Interior Board of Land Appeals decisions, existing and proposed regulations, and Department of Interior Solicitor opinions.

Cultural resources in the Billings Resource Area are managed within a multiple use framework. This means that resource "trade-offs" are often required in order to allow a variety of uses of public lands and its resources. Prior to the trade-off decision, however, facets of the aforementioned legislation require that the BLM inventory the public land, and, in certain cases, private land, for cultural resources where a federal undertaking or development for other resources will take place. BLM must consider the affects of their undertakings on cultural properties.

As time and funds permit, BLM also sponsors inventories under the Cultural Resource Management Program to locate sites eligible for the National Register and to comply with Section 110 of the National Historic Preservation Act of 1966 as amended. These surveys are directed toward areas where prior data indicates a possible need for active resource management to protect important sites.

The BLM utilizes three classes of inventory: Class I--Existing Data Inventory--a review and compilation of known cultural resource data for a specific area; Class II--Sampling Field Inventory--a sample oriented field inventory; and Class III--Intensive Field Inventory--a complete surface inventory of a specific area. Prior to any Class II or III surveys the BLM conducts, encourages, or requires a Class I inventory to expedite field work, insure project thoroughness, and aid in possible predictive modeling. BLM inventories are conducted by Bureau archeologists or historians, or a cultural resource consulting firm is contracted to do the work. Experienced individuals outside the Agency, and cultural resource consulting firms must have a current Federal Antiquities Permit in order to conduct reconnaissance, excavation, or cultural research work on BLM surface lands.

Through theoretical knowledge of the area, specific information goals and a research design, and the 8111 Manual, the BLM stipulates precisely how the survey will be conducted. The inventory should yield information on cultural resource types, location, and if possible, function; the likelihood for subsurface cultural material; environmental and topographic data; the types and numbers of features present; and the types and quantity estimates of bone, pottery, historical, and/or lithic material present. The BLM's 8111 Manual discourages collection of cultural material for analysis at the inventory stage. Instead, it specifies that only significant cultural material in immediate danger of destruction or disturbance may be collected.

Evaluation of the cultural resource is the next step required of the BLM. BLM cultural resource specialists may elect to determine the significance of the newly located cultural resources, or the contractor may be held accountable for significance statements. Evaluation is in terms of eligibility to the National Register of Historic Places (NRHP). The four criteria for eligibility are given in 36 CFR 60.6: The quality of significance in American history, architecture, archeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and (A) that are associated with events that have made a significant contribution to the broad patterns of our history; or (B) that are associated with the lives of persons significant in our past; or (C) that embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or (D) that have yielded, or may be likely to yield, information important in prehistory or history. Cultural resources that do not meet any of the four criteria are determined "not eligible" to the NRHP by the BLM in consultation with the Montana State Historic Preservation Officer (MSHPO). Resources which do not qualify for the National Register need not be given any further concern in a trade-off situation.

Cultural resources that meet any of the criteria in 36 CFR 60.6 are determined eligible to the NRHP by the BLM in consultation with the MSHPO and Keeper of the National Register (Keeper) in Washington D.C. Eligible cultural resources that cannot be preserved in the BLM trade-off scheme, or avoided during an undertaking, may require mitigation. Prior to any mitigation, the BLM must consult with the MSHPO and Denver-based Advisory Council on Historic Preservation (ACHP) on the Bureau's determination of effect upon the resources, and how the BLM plans to mitigate that effect. The BLM maintains a cooperative no-action policy until a comment has been received from the ACHP.

Mitigation per se is accomplished by the BLM or a contracted consulting firm. It may entail the total recovery and analysis of surface information of a site with no depth; or it may require data recovery in the form of excavation and analysis. Excavation of a cultural resource as a result of a specific undertaking usually occurs only in the portions of the site where the resource will be affected.

BLM activities that require environmental assessment also necessitate a Class I inventory, and in specific instances, a Class II or III survey. Determinations of eligibility are usually sought at this stage. Determinations of effect may be delayed until the location of surface disturbance activities are known precisely. In the case of Environmental Impact Statements (EIS), the February 26, 1982 Draft Revised Regulations for the Protection of Historic Properties encourages that determinations of effect be included in each relevant EIS.

Subsequent to cultural resource inventory and evaluation, BLM cultural resource specialists and management may determine that a certain NRHP eligible site is best managed intact for the public on public domain. This type of decision usually guarantees any future trade-offs in favor of the cultural resource, and is based on the site's rarity; public information potential; integrity; complexity, aesthetic appeal; socio-cultural value; ability to contribute to scientific and/or historic knowledge; or any combination thereof. The BLM may also attempt to acquire scientifically or historically valuable sites on private land through land exchanges and specific negotiations with the landowner(s), when such a goal is determined to be in the public interest.

Legislation such as the Archaeological Resources Protection Act. (ARPA) prohibits excavation, removal, damage, alteration or defacement of any significant archeological resource located on public or Indian lands unless such activity is pursuant to an issued Permit. Further, no person may sell, purchase, exchange, transport, receive or offer to sell, purchase, or exchange any archeological resource if such resource was excavated or removed from public or Indian lands. Individuals who participate in the above violations may be fined not more than \$10,000 or imprisoned not more than one year, or both upon conviction. Subsequent crimes, or a cultural artifact sale value--archeological repair value exceeding \$5,000, warrants larger and longer penalties under the law.

Public education programs in the Billings Resource Area consist of public meetings and school presentations given by MSO cultural resource personnel. Several BLM films are available to the public and Agency staff. They stress the importance of protecting the nation's heritage and point out the current wanton destruction of sites on public land by relic hunters--especially in the American southwest. The films reiterate that such activity is against the law.

The Billings Resource Area cooperates with law enforcement officers in the MSO by being willing to help prosecute those who would endanger cultural resources on BLM land. In addition, the staff at the resource area maintains a watchdog attitude toward people and activities on lands under its jurisdiction.

Source: BLM, 1982

E/D Model

The economic/demographic data used in the Draft Billings RMP/EIS for assessing impacts from coal development was provided by the Montana State Office Economic/Demographic (E/D) computer model. This model was developed by North Dakota State University (NDSU) and was expanded into Montana under a contract between the Montana State Office of BLM and the Department of Agricultural Economics, NDSU.

Outputs from the model can be at the regional, county, and municipal levels and include such variables as type of employment, population, population by age and gender, school enrollments by age, housing requirements by type, public sector costs and revenues by type, and net fiscal balance. Estimates of business activity, personal income, and requirements for medical and criminal justice services are available at the regional level. The model provides annual projections of these indicators over a 25-year planning horizon (1981-2005).

The E/D model uses a large range of user specified inputs which are designed to customize the model to a particular geographic area. This feature allows the user to take account of any anomalies which may be present in the area studied.

The E/D model is comprised of the five submodules. The following description discusses the overall objective of each module and explains how each module interacts with other modules. A much more detailed description of the overall E/D model and the five internal modules is available upon request.

Input-Output Module:

This portion of the model is responsible for forecasting the changes in the study area's economic sectors as a result of one or more development scenarios. This is accomplished by forecasting sales to final demand in the area's basic economic sectors. Technical input/output coefficients are then applied to the final demand forecasts to obtain projected total gross business volume by sector for the projection period. The projected total gross business volume, by sector, is then divided by the sector-specific productivity ratios to obtain the estimated employment levels required to bring about the level of development specified in the development scenario(s). This can loosely be considered the demand for labor necessary for development to occur.

Cohort Survival Module:

This module essentially forecasts the population by age and sex expected to be residing in the study area. This forecasting procedure considers birth rates, survival rates and migration rates to arrive at forecasts of study area population levels by age and sex. Labor force participation rates by sex, were then applied to the forecasted population levels to determine the forecasted labor force in the study area. This was considered the study area's future available labor supply. At this point, the E/D interface (re: Figure 1) comes into play by comparing the demand for labor (resulting from some development scenario) with the available supply of labor in the study area. Assumptions are made at this point concerning unallocated labor pool constraints which affect the amount of project related in-migration.

Residential Allocation Module:

This module allocates any immigration which is forecasted via the comparison of labor supply and labor demand in the E/D interface. Obviously, in-migration would occur if the project-related demands for labor are greater than the local available labor supply.

Data from past studies are used in developing estimates concerning the employment type specific population characteristics of the forecasted incoming workforce. These characteristics include: gender, marital status, presence or absence of family in the impact area, etc. This process results in estimates by year, of the overall characteristics of the total population influx forecasted by the model for the study area. This population increase is then allocated to individual study area communities via gravity modeling. This process assumes that a) immigrants will tend to settle in existing population centers in direct proportion to the population of those communities and b) immigrants will reside in communities in an inverse relationship to the distance between that community and the job site. In addition, the gravity model recognizes that non-distance qualitative considerations also influence settlement choices. This model is of the following form:

$$M_i = \frac{P_i}{D_i^a} W_i$$

$$\frac{1}{\sum_{i=1}^n \frac{P_i}{D_i^a} W_i}$$

Where M_i = fraction of total immigrants locating in city i
 P_i = population of city i
 D_i^a = distance between city i and job site raised to the power a
 W_i = relative qualitative attraction of city i

Service Requirements Module

This portion of the model forecasts selected public service requirements of the estimated population influx. These services are education, housing, medical, criminal justice. This is provided as model output to forecast the demands on these four services under development conditions.

Fiscal Impact Module:

This module forecasts the changes in costs and revenues of governmental units which are likely to occur as a result of one or more development scenarios. The changes in costs and revenues would occur as a result of changes in local population levels and associated service demands. This analysis results in forecasts of net public sector revenues and costs at the local level by comparing cost and revenue forecasts to arrive at a net surplus or deficit value annually. A net public service deficit indicates that costs exceed revenues for that period. This can provide indications of when project-related public sector deficits or surpluses could occur in the future and to what extent. As such, it can alert interested parties to the possible occurrence of these types of impacts and give a general idea of when these impacts could occur.

The above information is intended to give the reader an "overview" understanding of how the E/D model works. As mentioned earlier, a much more detailed writeup of the technical aspects of the model is available upon request.

Coal Mine Specifications

The following are input specifications used in the E/D model in analyzing impacts from coal development. For analysis purposes only, a scenario was developed which proposes that two mines will be developed in the resource area--a 300,000 ton per year surface mine in the Bull Mountains of Musselshell County and a 150,000 ton per year underground mine in the Fromberg area of Carbon County.

Coal Mine Specifications

	<u>Carbon County</u>	<u>Musselshell County</u>
Type of Mine:	Underground	Surface
Location:	2 Miles W., Fromberg, MT	15 Miles SE, Roundup, MT
Begin Construction:	1985	Mid-1987
Begin Production:	1988	End-1988
Beginning Yr. Tonnage:	30,000 tpy	50,000 tpy
Full Production Tonnage:	150,000 tpy	300,000 tpy
Heat Value:	11,000 BTUs/lb	10,700 BTUs/lb
Percent Federal Coal:	75%	50%
Acreage Mined/Yr.:	Not Applicable	18
Severance Tax Rate:	5%	30%

Social Methods

The Guide to Social Assessment

The social analysis was based on the Guide to Social Assessment which was developed by Mountain West Research, Inc. under contract with the Bureau of Land Management. The guide was designed to assess the impact of energy related development in rural western United States communities. The guide was based on an intensive literature search and primary research in the western communities where energy related development had taken place.

Impacts to communities are addressed by examining the direct project inputs such as incoming population and number of jobs created in light of the community's resources, social organization and level of well-being. Community resources include historical experience with growth as well as cultural demographic and employment characteristics and attitudes toward development. Community social organization includes the social structure and processes which have evolved over time and are particular to each community. These structures include diversity/complexity, outside linkages, distribution of resources and power, coordination and cooperation and personal interaction. Community well-being includes rates of behaviors (such as crime, divorce, suicide, unemployment), access to resources (employment, community services, recreation) and perceptions of community and personal well-being.

Impacts are assessed by determining whether and in what manner the community's social structure and well-being might be changed given the direct project inputs and the existing situation. As a high estimate, the guide suggests a 10% population change might indicate a significant impact. The actual impacts would depend on many things including the community's past history of development, monies available to mitigate impacts and the community's ability to mobilize to prepare for the development.

Source: BLM, 1982

APPENDIX 4.9: METHODOLOGY FOR CONTROLLED BURNS

A. General

The initial assessment and identification allotments which BLM felt would have potential for sagebrush manipulation through burning was conducted systematically, utilizing in-house inventory data which provides canopy coverage estimates by vegetative type. Sagebrush stands having estimated canopy coverage exceeding 25% were mapped. BLM then applied vegetative response capabilities of the various soil groupings to the mapped areas. (Soil groupings and their rate of response can be found in Appendix 4.1.) BLM's final acreage figure of 21,520 acres reflects the maximum number of acres, if burned, that could respond favorably.

B. Objectives

No large scale burns will be proposed. The primary objective is to open small acreages of very dense canopy sagebrush to enhance the production of grasses and forbs. All burns will be conducted so as to result in irregular shapes, where possible, to maximize the "edge" effect produced. The burns will be located to benefit both wildlife and livestock.

C. Inventory

On-the-ground inventories of the 21,520 acres are underway on 31 grazing allotments throughout the resource area. The inventory, when completed, will identify on aerial photo overlays all sagebrush stands having a canopy coverage exceeding 40%. (Forty percent was selected because of its minimum value to most wildlife species and livestock.) All known crucial habitats for upland game birds, antelope and state species of special interest and concern are then plotted. Where crucial wildlife habitats overlap sagebrush stands, the area will automatically be eliminated from further consideration. Those areas which are not in conflict will be carried forward for consideration for burning.

D. Coordination

The Montana Department of Fish, Wildlife and Parks (MDFW&P) will be requested to offer an opinion on the suitability of any proposed burning project. The MDFW&P will also be consulted on the development of the design and stipulations to be included in the burn plans. All burns will be conducted in conformance with the Montana Cooperative Smoke Management Plan.

E. Burning

Once a comprehensive burn plan has been completed, the burn will be carried out cooperatively between the BLM, State of Montana and the livestock operator. Every effort possible will be made to ensure adequate fire fighting equipment to handle the burn is standing by, and that all safety standards are closely adhered to.

F. Monitoring

For each burn site, BLM will initiate an intensive monitoring plan to document the rate of response and evaluate the success in meeting overall desired objectives.