APPROVED RESOURCE MANAGEMENT PLAN

for

PUBLIC LANDS ADMINISTERED

by the

BUREAU OF LAND MANAGEMENT
BUFFALO FIELD OFFICE

Prepared by

United States Department of the Interior
Bureau of Land Management
Buffalo Field Office

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MISSION STATEMENT

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

BLM/WY/PL-01/013+1610

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BACKGROUND AND PURPOSE

This document is a result of the review and evaluation of the 1985 Buffalo resource management plan (RMP) and subsequent analyses and changes in policy. RMPs are written to guide the management of Bureau of Land Management (BLM)-administered public land and mineral resources.

This document lays out the existing management direction for the land and mineral resources administered in Campbell, Johnson, and Sheridan counties. This direction is derived from the 1985 Buffalo RMP, as amended, and as modified by subsequent changes in BLM policy.

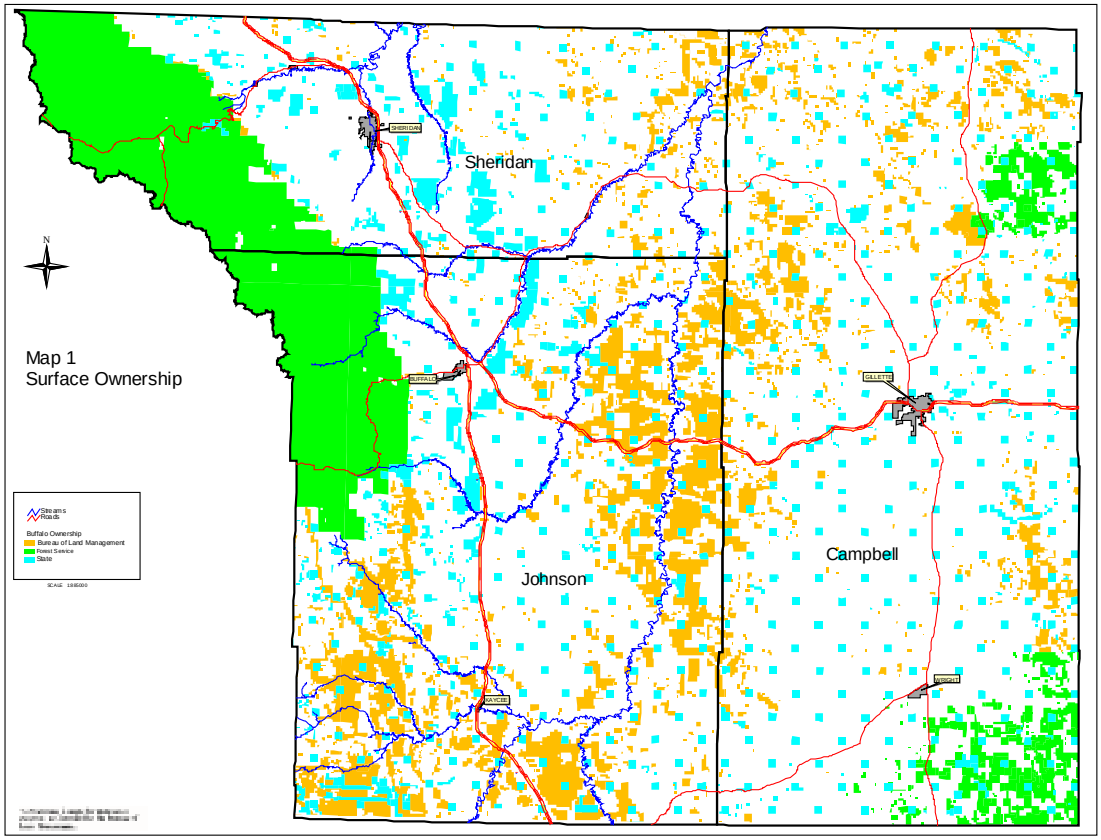
The Wyoming BLM has developed "mitigation guidelines" for use in determining the types and levels of mitigation needed to protect important resources from actions involving surface-disturbing and other human-presence disturbance or disruptive activities. These guidelines are used in the RMP process for (1) developing the alternatives for the EIS and analyzing the impacts of the alternatives; (2) as part of the planning criteria for developing the alternatives and for determining mitigation requirements to be included in the approved RMP; and, (3) in planning and developing project proposals. The "Wyoming BLM Mitigation Guidelines for Surface-disturbing and Disruptive Activities" are detailed in appendix A, which also contains further information on how they are used in the RMP process.

PROFILE OF THE AREA ADMINISTERED BY THE BUFFALO FIELD OFFICE

BLM in Wyoming removed its mid layer of management October 1, 1998, and renamed its districts and resource areas as field offices. The four district and ten resource area offices into ten field offices. The district and resource area offices in Worland, Rock Springs, Rawlins and Casper were consolidated into single field offices with a single manager. BLM resource area offices in Newcastle, Buffalo, Cody, Lander, Pinedale and Kemmerer were renamed as field offices.

The area administered by our Buffalo Field Office consists of all the public lands and minerals in Campbell, Johnson, and Sheridan counties in north central Wyoming (map 1). These three counties are part of the Northern Great Plains. The area is mineral-rich with world-class coal deposits in the Powder River Basin. These deposits produce 78% of the nation's federal coal. About ¼ of the state's crude oil production also comes from the Buffalo field area.

There are varied and overlapping land surface and mineral ownerships within this three-county area. As an example, Campbell County has more private surface than any other county in Wyoming, but the majority of the mineral estate is federal. Coal is about 90%


SHERIDAN
Sheridan
N
Map 1
Surface Ownership
BUFFALO
GILLETTE
Streams
Roads
Buffalo Ownership
Bureau of Land Management
Forest Service
State
SCALE 1:816,000
Johnson
Campbell
KAYCEE
WRIGHT

and oil and gas is about 50%. Therefore, the administrative jurisdictions for land use planning and for managing the land surface and minerals are also varied and overlapping.

This area is also one of the most populous areas in Wyoming with urban areas in Sheridan, Gillette, and near-by Casper. The combination of population density and a limited public land base results in a higher demand for recreation on public lands. Approximately half of these lands are either difficult to access or inaccessible without crossing private land. Added to this demand is heavy pressure from recreationists. We are concerned with meeting this recreational demand without violating the property rights of private landowners. This issue is intensified because major tourism routes cross this area connecting the Black Hills and Yellowstone National Park.

Table 1 shows the acreage for the various ownerships and management responsibilities in the area.

PLANNING AND MANAGEMENT DECISIONS (by resource)

The following RMP decisions are presented in alphabetical order, based on the specific resource. Decisions and policy are shown in **bold** text.

AIR QUALITY MANAGEMENT DECISIONS

Management objective: Maintain or enhance air quality, protect public health and safety and sensitive natural resources, and minimize emissions that could result in acid rain, violations of air quality standards, or reduced visibility.

Management decisions: Any BLM-initiated actions or authorization that result in air quality or visibility deterioration are conditioned to avoid violating Wyoming and national air quality standards. This is done by coordinating BLM-managed activities with the Wyoming Department of Environmental Quality (WDEQ) and the U.S. Environmental Protection Agency (EPA).

Dust control measures are required to be taken to increase visibility and reduce particulate impacts for all construction and other surface-disturbing activities. Air quality standards are monitored by the WDEQ.

Air quality permits are obtained from the WDEQ before any prescribed fires are set on public land. Smoke and pollution are minimized as described in the BLM smoke management guidebook.

TABLE 1
LAND AND MINERAL OWNERSHIP AND ADMINISTRATIVE JURISDICTIONS WITHIN CAMPBELL, JOHNSON, AND SHERIDAN COUNTIES

	Areas the Buffalo Plan Decisions Will Cover	Approximate Acreage
A.	Areas where the land surface and the underlying mineral estate are both federally owned and are both administered by the BLM.[a/]	796,400
B.	Areas where the land surface is federally owned and administered by the BLM and the underlying mineral estate is owned and administered by private individuals, the state of Wyoming, or local governments.[b/]	40
C.	Areas where the mineral estate is federally owned and administered by the BLM and the land surface is owned and administered by private individuals, the state of Wyoming, or local governments.[c/]	3,934,700
Total BLM-administered federal land surface and mineral estate to be covered by plan decisions (A + B + C)		**4,731,140**
D.	Areas where the federal land surface is administered by another federal agency.	885,700
E.	Areas where the land surface and underlying minerals are both owned by private individuals, the state of Wyoming, or local governments.	1,722,100
Total surface acres of all lands administered by the Buffalo Field Office (A + B + C + D + E)		**7,338,940**

[a/]These BLM-administered federal lands will be called "public lands." According to FLPMA, section 103(3), "The term 'public lands' means any land and interest in land owned by the United States within the several States and administered by the Secretary of the Interior through the Bureau of Land Management, without regard to how the United States acquired ownership, except--(1) lands located on the Outer Continental Shelf; and (2) lands held for the benefit of Indians, Aleuts, and Eskimos."

[b/]The surface of these lands will also be described as "public lands" although the BLM will make no planning or management decisions for the minerals.

[c/]The interest in these lands administered by BLM consists of the minerals. These will **not** be called "public lands." BLM's interest will be described as "BLM-administered minerals" or BLM-administered mineral estate."

CULTURAL RESOURCES MANAGEMENT DECISIONS

Management objective: Protect, preserve, interpret, and manage significant cultural resources for their informational, educational, scientific, and recreational values.

Management decisions: Using the land for scientific purposes such as archeological collections is authorized through a permit system. Since 1985, 53 permits have been issued, and it is expected that about 12 more would be issued between 1991 and 2005.

Site-specific inventories for cultural resources are required before any surface-disturbing activities can begin. Adverse effects on significant resources are mitigated, or the resources themselves are avoided. Sites listed on, or eligible for, the National Register of Historic Places (NRHP) are protected. Since 1985, about 1,500 new sites have been located in the resource area, of which 5% are eligible for nomination to the NRHP. About 150 new sites a year are expected to be recorded through 2005, with the same percentage eligible for listing on the NRHP.

Rock art, as well as prehistoric and historic archaeological sites and districts associated with specific time periods or cultures, are managed for scientific, public, and sociocultural use. General areas are managed for research emphasizing interpretation of the environments in which prehistoric man lived. Specific sites or areas are preserved for future study and use. Cultural resource interpretive sites, such as rock art and historic trails, are developed or will be developed, providing such public benefits as scenic overlooks, signs, and walking trails.

FIRE MANAGEMENT DECISIONS

Management objectives: 1) To restore the natural role of fire in the ecosystem; 2) to cost effectively protect life, property, and resource values from wildfire; and 3) to use prescribed fire to achieve multiple use management goals.

Management decisions: Unwanted wildland fires will be suppressed, the use of some types of suppression equipment will be restricted in some areas, and fire and suppression damage will be rehabilitated. Table 2 gives the number of fires and acres burned since 1985. The figures in this table do not include assist fires or some false alarms. No change in the number of fires in the next ten years is expected. However, the number of acres burned is expected to increase to an annual average of 1,000 acres due to increasing fuel loading, a change in management strategy using an “appropriate management response” (see “Glossary”) as wildland fires occur, and probable implementation of prescribed natural fire.

Wildfires will be managed in all areas of the resource area. Priority will be given to suppressing fires in or threatening higher value resources (commercial timber areas, WSAs, Middle Fork Powder River management area, developed recreation sites, and areas of wildland/urban interface) and keeping fires from spreading onto private, state, or other federal lands. Protecting human life will be the highest priority. BLM personnel and equipment are used to suppress fires directly, or in conjunction with, county, state, or other federal resources via cooperative agreements. Suppression actions are immediate in order to

contain fires within the smallest acreage possible consistent with resource values, environmental damage, and safety of the public and firefighters. The number of fires and the size of fires varies from year to year and primarily depends on weather factors. Long periods of drought and strong winds are particular reasons for numerous and large fires. Most wildfires are caused by lightning with occasional fires resulting from human-related sources (campfires or fireworks). Fire prevention and education programs are conducted to help reduce the number of human-caused fires.

Heavy equipment (dozers) will be restricted from being used for wildfire suppression in the WSAs, the Middle Fork Powder River management area, and areas of known cultural values (for example, ruts of the Bozeman Trail). Whenever heavy equipment is used (or planned to be used) an archeologist is consulted to advise firefighters of cultural values which could be damaged or destroyed.

TABLE 2
NUMBER OF FIRES AND ACRES BURNED
1985-1994

Year	Number of Fires	Acreage Burned
1985	15	355.4
1986	0	0.0
1987	6	5.1
1988	22	794.3
1989	4	3.5
1990	2	3.0
1991	10	2,189.5
1992	9	53.0
1993	3	3.0
1994	8	616.5
Total	79	4,023.3
Average	7.9	402.3

Aerial retardant use will be restricted to keep retardant out of water sources. Specific restrictions on retardant use apply to the WSAs, and helispot construction is also prohibited in the WSAs.

Firelines which are constructed by heavy equipment, or on steep slopes, will be rehabilitated to prevent or control erosion. Rehabilitation includes, but is not limited to, water barring and reseeding. Fireline restoration is initiated as part of the suppression effort in order to reduce scarring from any heavy equipment used to prevent or control soil erosion.

Burned areas are inspected to determine if the whole area needs to be reseeded, replanted, or rested from grazing to allow vegetative recovery. These actions may occur soon after the fire or at a later time depending on the success of natural recovery.

Prescribed burns will be used as a tool to reach management objectives planned for areas in conjunction with such things as range and wildlife habitat management projects.

FOREST RESOURCES MANAGEMENT DECISIONS

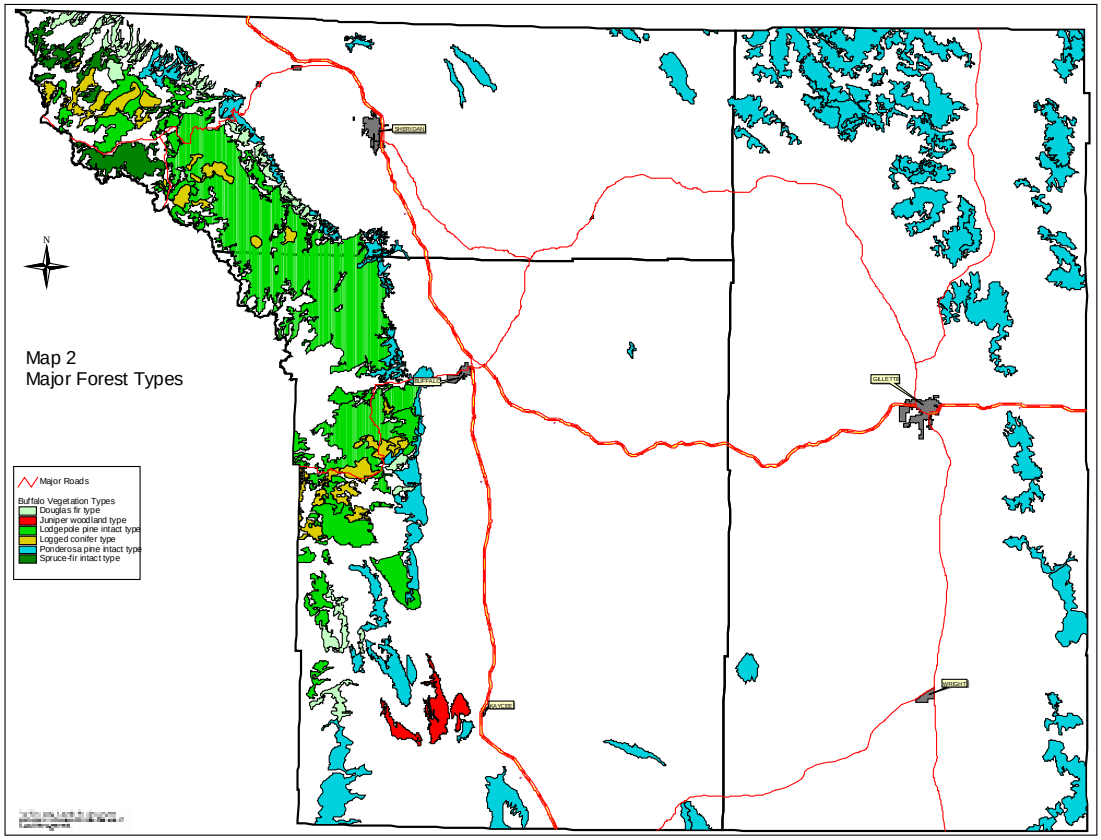
Timber Harvesting

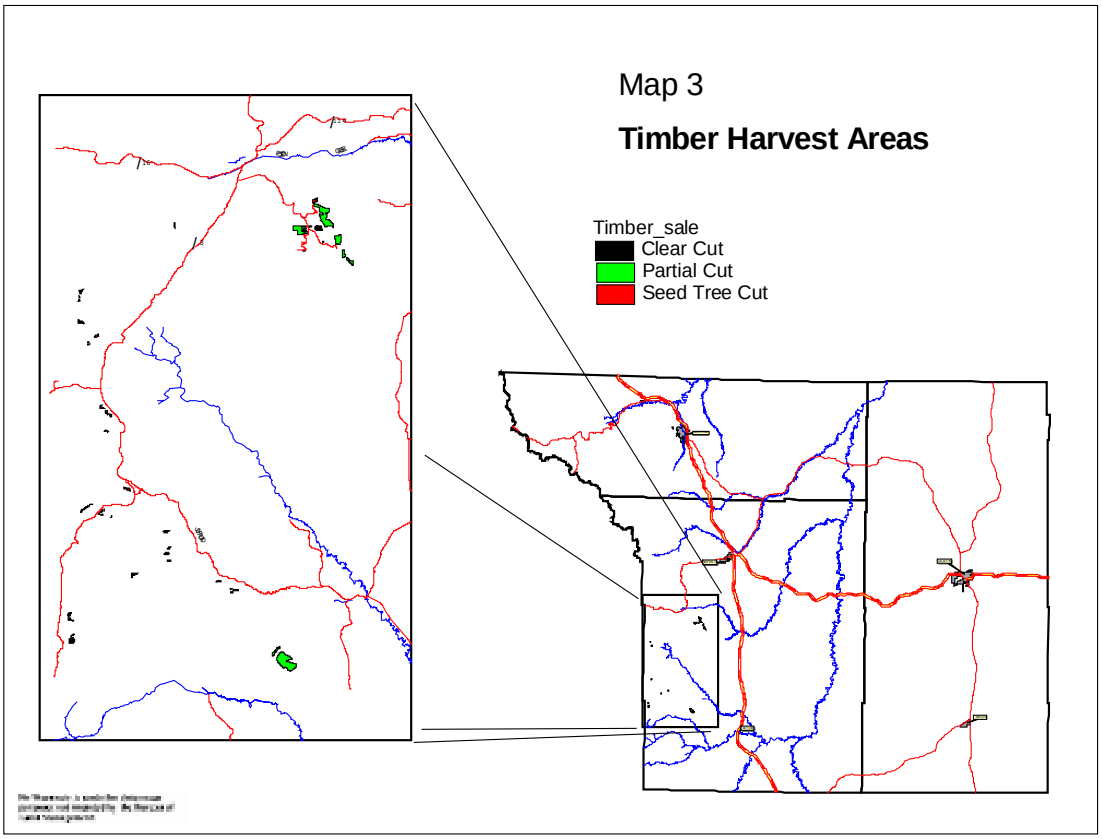
Management objective: Maintain and enhance the health, productivity, and biological diversity of forest and woodland ecosystems. Provide a balance of natural resource benefits and uses, including opportunities for commercial forest production.

Management decisions: Timber harvesting is allowed at 10-year harvest levels not to exceed 10 million board feet (mmbf). Forest products are sold by permit as requested. Easements are acquired across private and state land where access is needed for timber harvest and other forest management purposes. Commercial harvesting of forest products is from the types of timber shown on map 2. Nine mmbf could be sawtimber and one mmbf could be post, poles, or other nonsawtimber products. There are 11 priority timber harvest areas; however, sawtimber harvest could occur in other areas if biological or economical conditions warrant (map 3). Up to one mmbf of forest products could be sold over a ten-year period from noncommercial ponderosa pine, limber pine, and juniper woodland areas to meet public demand for posts, poles, firewood, and specialty wood consistent with wildlife habitat requirements

Because of increased environmental concerns, the inability to purchase easements or gain permission from landowners to access many commercial harvest areas on BLM-administered public land, and other resource concerns such as elk hiding cover, annual sawtimber harvest has only averaged 400 thousand board feet (mbf). Sawtimber harvest is estimated to decline to an annual harvest rate of 130 mbf from 1991 to 2005. Over this period, about 200 acres would be affected by timber harvesting. About 2 miles of roads would be built to meet sawtimber harvest needs while about 2 miles of no longer needed timber roads would be reclaimed. Timbering activities on private, state, and Forest Service (FS) lands may affect these estimates.

Individual clearcuts are not allowed to exceed 20 acres. Harvested areas are planted if they have not regenerated within 5 years. Regeneration areas are often fenced to prevent livestock from damaging seedlings. Timber harvests are prohibited within 200 feet of surface water. Timber harvesting is limited to commercial forestlands with slopes less than 45% (also see appendix B). Silvicultural practices and timber harvesting are


Map 2
Major Forest Types
N
Major Roads
Buffalo Vegetation Types
Douglas fir type
Juniper woodland type
Lodgepole pine intact type
Logged conifer type
Ponderosa pine intact type
Spruce-fir intact type
BUFFALO
GILLETTE
WRIGHT


Map 3
Timber Harvest Areas
Timber_sale
Clear Cut
Partial Cut
Seed Tree Cut

prescribed for areas where forest health and enhancement of species, stand age, and past stocking levels are primary objectives. A variety of forest silvicultural and cutting methods such as clearcutting, shelterwood, individual tree selection, seed tree regeneration treatments, and commercial and noncommercial tree thinnings are used. Overstocked regenerated harvest sites and naturally occurring overstocked younger-aged forest stands are thinned to enhance growing conditions.

GEOLOGY AND MINERAL RESOURCES MANAGEMENT DECISIONS

Management objective: Maintain or enhance opportunities for mineral exploration and development while maintaining other resource values.

Management decisions: BLM will provide for the efficient use of the mineral resources. This section discusses the BLM-administered mineral resource uses that are provided, where these uses can or cannot occur, and the authorization process. Mineral uses are discussed separately because a great deal of the public mineral resources are "split estate"; that is, where the surface ownership is not BLM, but all or a portion of the mineral rights are retained by the federal government.

There are two general categories of split-estate lands. One category is those lands where the land surface is federally-owned and administered by BLM, while some or all of the minerals under them are owned and administered by either private parties or by local or state governments. The other category is those lands where the land surface is owned and administered by private parties or by local or state governments, and some or all of the minerals under them are federally owned and administered by BLM. "Some or all of the minerals" means there may also be more than one owner among the different types of mineral estates. For example, in some lands, the federal government may own only the oil and gas or only the coal, or both, while the other mineral resources in those same lands (locatable, salable, and other leasable minerals) are owned by the state or by private parties.

In either category, the mineral owners are entitled access to their minerals to explore for and develop them and to prudently use an area of the land surface and surface resources that are directly necessary to those exploration and development activities. Mineral owners are required to compensate for damage to surface owner improvements, to avoid or mitigate other affects of their activities, and to reclaim the surface.

BLM has no jurisdiction or statutory authority to make land use planning or resource management decisions for the use of any land surface that is owned by private parties or by local or state governments.

BLM has the authority and the responsibility to plan for and manage the federal minerals under these split-estate lands. Planning and managing the federal mineral estate includes:

--- making planning and management decisions that salable and leasable federal minerals will or will not be sold or leased, and implementing those decisions;

--- deciding whether or not mining claims may be filed for locatable federal minerals and implementing those decisions; and,

--- deciding any required conditional provisions, mitigation measures, and land surface reclamation requirements that would be included in any federal minerals sales or leases (to include use authorizations) that the BLM may issue, related to exploration and development of the federal minerals in these lands, and implementing those decisions.

Such conditions, mitigation measures, and reclamation requirements are not requirements that we place on the land surface or the surface owners. Rather, these are standard requirements attached to any use authorizations related to exploring and developing the federal minerals. These requirements are a result of both federal and state laws enacted in the interest of protecting the general environment. They also protect rights and properties of the surface owners from unnecessary and undue degradation and damage that may be caused by any activities related to "federal actions" that we would take or authorize, such as selling, leasing, exploring for and developing the federal minerals. BLM personnel work with both the developers of the federal minerals and the surface landowners to reach mutually acceptable surface disturbance conditions, mitigation measurers, and reclamation requirements. (There are some instances where the surface is federally administered, and the minerals are in private ownership.) On split-estate lands and on federal lands administered by other federal agencies, the surface owner or other federal agency controls, plans for, and manages the surface uses. However, BLM coordinates with them in planning and managing the leasing and development of federally owned minerals. Use authorizations may be conditional on maintaining the sensitive or unique resource values identified under the "Sensitive or Unique Resources" section. Also see appendix B.

Oil and Gas

Oil and gas leases are sold by competitive bid; lessees normally pay an annual rental of $1.50 to $2.00 per acre, but at times pay much more, and a royalty rate of 12½%. Oil and gas drilling and production is authorized via approval of an application for permit to drill (APD) once the mineral estate is leased. Basically, an APD is an approval to drill a well and produce oil and gas from the federal lease. We authorize geophysical exploration by processing a notice of intent. This is a notice that an oil and gas operator intends to explore for oil and gas in a specific area using seismic or other geophysical methods. Coal bed methane development is authorized by the same process as oil and gas. There are approximately 4.66 million acres of BLM-administered federal oil and gas mineral estate available for leasing, exploration, and development in the resource area.

Management decisions: Continue to lease and allow development of federal oil and gas in the Buffalo Field Office Area.

Continuation of leasing and development of Federal oil and gas reserves in the Buffalo Area is vital to the local and regional economy. The environment will be adequately protected by application of the BLM's standard stipulations and by case-by-case application of other mitigation of surface disturbance. These protective measures have been analyzed in numerous EAs and EISs for both conventional oil and gas and coal bed methane development.

Conventional oil and gas development has proceeded at a much slower rate than was predicted in the 1985 RMP EIS. That document predicted and analyzed the impacts of drilling 517 wells per year. Actual data shows that the Wyoming State Oil and Gas Conservation Commission approved an average of 190 wells per year and approximately 152 of these were drilled per year (appendix C) .

Shallow wells are an increasing part of overall drilling in the resource area. Most are drilled for coal-sourced natural gas in eastern Campbell County. Few shallow wells were drilled before 1987. "Appendix C: Reasonably Foreseeable Development Scenario for Oil and Gas Development in the Buffalo Field Office Area, Wyoming" discusses past and future oil and gas activity in the Buffalo Field Office Area.

Until Congress decides to designate or not designate the three WSAs in the resource area--Gardner Mountain (about 6,400 acres), North Fork (10,000 acres), and Fortification Creek (12,400 acres) as wilderness, about 28,800 acres are not available for oil and gas leasing. If Congress decides not to designate them as wilderness, they would be available for oil and gas leasing and development.

About 1,300 acres of federal oil and gas estate are not available for leasing because the acreage is within a city or town, and 44,000 acres are unavailable due to coal mining activities. Any oil and gas lease offer tracts that conflict with coal mining are pulled out of the offer. In the Powder River Basin, oil and gas and coal frequently occur in the same place. The public interest is best served by optimizing the development of both resources in an environmentally sound manner. In order to do this, the list of competitive oil and gas lease offers is reviewed against existing coal leases that have approved mining and reclamation plans If a company expresses interest for a specific tract that has been pulled, we consult with the coal operator to determine if oil and gas drilling and production could be conducted without interfering with coal operations. Where possible, oil and gas leases are issued with specific conditions to help prevent a development conflict with coal. In such cases the following stipulation is attached to the lease.

Surface occupancy or use will be restricted or prohibited on this lease (oil and gas lease) owing to conflicts with ongoing coal activities. Prior to surface use, an acceptable plan of mitigation of anticipated impacts must be negotiated between the oil and gas and the coal lessees and approved by the authorized officer. This stipulation may affect development, operations and maintenance of facilities.

About 25,000 acres of federal oil and gas estate is available for leasing with the condition that no oil and gas activity occur on the surface (no surface occupancy--NSO) due to federal and state highways. This means that these leases would either be directionally drilled or developed in conjunction with adjoining leases. Only 2½% of the total federal minerals in the Buffalo Resource Area are not available for lease or development.

Coal

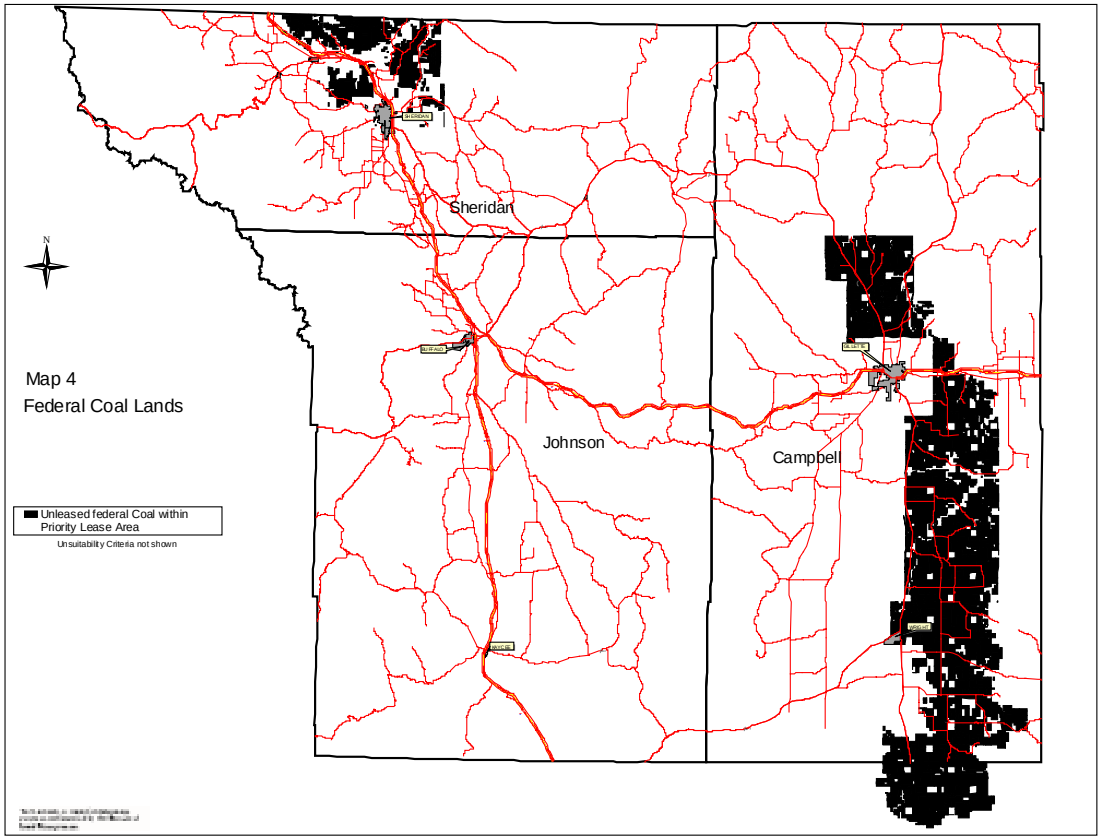
Management decisions: All federal coal lands (federal mineral estate for coal retained by the federal government) are open to study and exploration. Under the federal coal leasing program, federal coal lands are screened for coal potential, unsuitability, and multiple use constraints (appendix D). **Areas that pass these screens are available for further consideration for competitive coal leasing.** In the resource area 494,000 acres in eastern and southeastern Campbell County and 73,000 acres in north central Sheridan County are available for coal leasing (map 4). The screening process identified buffer areas around existing communities. The Gillette buffer area (about 78,000 acres) is open for lease by application, emergency leasing, exchanges, and lease modifications. About 31,000 acres within the Buffalo buffer zone, 33,000 acres within the Sheridan buffer zone, and 4,000 acres within the Wright buffer zone are closed to further consideration for coal leasing and development. The results of the coal screening analysis is presented in the "Energy Resources" booklet.

Federal coal lands available for consideration for competitive coal leasing are open for lease by application (LBA), lease modifications, emergency leases, and exchanges. This includes uncommitted coal land determined to be acceptable for coal development and leasing consideration within the priority areas for competitive leasing. Coal lands outside the priority leasing areas which are applied for must pass the coal screening process before they will be considered for leasing.

All federal coal lands that are open to further consideration for competitive leasing and development are subject to continued field investigations, studies, and evaluations to determine if certain methods of coal mining could occur without having significant long-term impacts on wildlife, alluvial valley floors, threatened and endangered plant and animal species, and existing transportation systems. There are currently some areas unsuitable for leasing because of wildlife concerns, alluvial valley floors which are significant to farming, and rights-of-way.

Coal leasing in producing oil and gas fields would be deferred unless or until coal development would not interfere with the economic recovery of the oil and gas resources. This would be determined on a case-by-case basis.

Any exploration drilling conducted to gather data concerning unleased federal coal, strata above the coal, hydrology of the coal, and surrounding strata requires an exploration license. Drilling water monitor wells in areas of unleased federal coal


Sheridan
Johnson
Campbell
N
Map 4
Federal Coal Lands
Unleased federal Coal within Priority Lease Area
Unsuitability Criteria not shown

requires an incidental exploration license.

The right to mine federal coal is conveyed by a coal lease. Before a new federal coal lease can be mined, the federal coal lessee must obtain approval of a detailed mining and reclamation plan from the state of Wyoming and the Secretary of the Interior. Federal coal leases are sold competitively through a public sealed-bid process. A federal coal lease is issued to the bidder offering the highest bonus payment or bid at each sale if a federal sale panel determines that the bonus bid meets or exceeds the fair market value of the coal as determined by BLM. A bonus bid is a payment made to acquire a federal coal lease. Coal lessees also pay an annual rental based on acreage leased as well as a 12.5% royalty rate on the coal when it is produced. In Fiscal Year 1999, the federal government collected approximately 137 million dollars in royalties from federal coal produced in the planning area (Campbell County, Wyoming). Federal royalty and bonus bid payments are divided equally with the state.

Since 1990, approximately 2.365 billion tons of federal coal have been leased and bonus bid payments have totaled 521.2 million dollars in the Wyoming Powder River Basin. Approximately 98% of this newly leased coal is located in the planning area. An additional 2.2 billion tons have been applied for. In 1999, there were 13 active mines operating on around 96,100 acres of leased federal coal in the planning area. Annual total production from the mines in Campbell County (of which 95% is federal coal) has increased from 116 million tons in 1985 to over 294 million tons in 1999. Since 1995, the annual increase in production has ranged from 1.1% to 11.9% over the previous year. Production is expected to increase an average of 5% annually through 2005. Since 1990, mining activities have disturbed an average of 2,600 acres per year, and an average of 950 acres per year have been permanently reseeded.

From 1985 to 1989 the Powder River coal region was a designated federal coal production region where any leasing (other than emergency leasing) was accomplished under the rules and procedures for regional lease sales. Regional lease sales offer many parcels at one sale on a competitive basis. No regional sales were conducted because there was not enough interest from industry. In 1989, the Powder River coal region was decertified as a coal production region. Since 1989, individual LBA requests are accepted and acted on case by case. An LBA sale involves one parcel at a sale on a competitive basis. Since 1990 nine LBAs have been sold and one exchange has been completed. Six LBAs are pending and one exchange is pending.

Locatable Minerals (bentonite, uranium, and others)

Management decisions: Unless formally withdrawn from mineral location, all lands in the resource area, including federally administered surface/minerals and split estate, are open to exploration, location, and development of locatable minerals on valid mining claims. In order to explore and develop locatable minerals (excluding casual use), a notice of intent or a plan of operation is required depending on the amount of disturbance and type of activity. All locatable minerals actions are reviewed to ensure compliance with the bonding policy for surface-disturbing activities.

The Amsden Creek winter game range (480 acres) and Middle Fork Canyon (about 11,000 acres) have been withdrawn from mineral location. Locatable mineral activities are restricted in Fortification Creek, Gardener Mountain, and North Fork WSAs (about 28,931 acres).

From 1985 through 1994, 607 mining claims have been filed and 740 claims closed in the Buffalo Area These claims were primarily for bentonite and uranium. Approximately 1,279,200 tons of bentonite and 1,018,300 pounds of uranium have been produced in the area from 1990 through 1994. Production rates will probably increase slightly in the short term; however, long-term production will depend entirely on market demand. BLM's only involvement with unpatented mining claims is to ensure that there is no undue or unnecessary surface degradation on BLM-administered public lands. About 5 acres of federally administered surface acres are disturbed annually, and it is projected to remain about the same through 2005. Appendix E contains a reasonable foreseeable development scenario for uranium in the Buffalo Field Office area.

Since 1985, nine mining claims have been patented in the BRA totalling approximately 690 acres and 328,300 tons of bentonite. Once the claims are patented, BLM's management of the land ends unless other subsurface minerals not included in the patent are retained (oil, gas, or coal). In the case of these nine claims, leasable mineral rights (oil and gas) were retained.

Salable Minerals (sand, gravel, scoria)

Management decisions: Mineral materials are sold by volume at appraised value to commercial users; other governmental agencies have free use. **The majority of lands in the resource area, including federally administered surface/minerals and split estate, are available for mineral material exploration and development. Mineral materials activities are prohibited in the Fortification Creek, Gardener Mountain, and North Fork WSAs (about 28,931 acres).**

Mineral material production has provided 3,857,500 cubic yards of sand, gravel, and scoria from 47 sales contracts and 26 free-use permits from October 1985 through September 1992. The area has produced a total of about 4,375,600 cubic yards between 1991 and 1994, of which 49% was from federal minerals. Annual production and surface disturbance is expected to remain about the same through 2005. About 15 acres, most of which is on split estate private surface ownership, would be disturbed and reclaimed each year.

Other Minerals

Management decisions: Geothermal resources are available for leasing in areas that are open to oil and gas leasing. Areas closed to oil and gas leasing are also closed to geothermal leasing. We consider leasing other minerals (phosphates or sodium) on a case-by-case basis.

HAZARDOUS MATERIALS MANAGEMENT DECISIONS

Management objectives: Protect public and environmental health and safety on BLM-administered public lands, comply with applicable federal and state laws, prevent waste contamination due to any BLM-authorized actions, minimize federal exposure to the liabilities associated with waste management on public lands, and integrate hazardous materials and waste management policies and controls into all BLM programs.

Management decisions: For any authorized activities involving hazardous materials or their use, precautions will be required to be taken to guard against releases into the environment. If a hazardous material is released on the public land, appropriate warnings are provided to potentially affected communities and individuals. Precautions are then taken against public exposure to contaminated areas. Public lands contaminated with hazardous wastes are reported, secured, and cleaned up according to federal and state laws, regulations, and contingency plans (including the federal Comprehensive Environmental Response, Compensation, and Liability Act). **Parties responsible for contamination will be liable for cleanup and resource damage costs, as prescribed by law.**

LANDS AND REALTY MANAGEMENT DECISIONS

Management objectives: Avoid the potential of inadvertent trespass by people accessing the public lands, improve access and manageability of the public lands.

Current policy is to sell lands in unique circumstances when the public can be benefited. Land exchanges are more beneficial to the public and are preferred over land sales. Priority is given to those lands that can provide access to large blocks of public land or to public land with unique resources. Lands with water are also desirable. NonBLM lands near blocked BLM-administered public land in the South Big Horns or lands with high scenic value are considered more desirable than nonBLM land near blocked BLM-administered lands without timber or scenery. Land with valuable wildlife habitat is also important if it is adjoined by blocks of public land. Blocked land and access is considered desirable if accessible to communities such as Gillette. The blocked BLM-administered public land may be located in another resource area or district. For more information see appendix F.

Rights-of-way (ROW)

Management objective: Support the multiple-use management goals of the various BLM resource programs; respond to public requests for land use authorizations, sales, and exchanges; and, acquire access to serve administrative and public needs.

Management decisions: Long-term occupancy of the public lands for roads, power lines, pipelines, communication sites, and irrigation ditches is authorized by granting a ROW. ROWs are to be removed and reclaimed upon termination of the grant. Right-of-way applicants are required to document the use or transportation of hazardous materials and toxic substances within the right-of-way. Since 1985, 850 rights-of-way have been issued in the planning area. Less than 30% of these ROWs require an annual rental fee.

Transmission lines and transportation facilities are located to the extent feasible within identified corridor areas. Communication sites are not authorized on North Middle Butte unless it becomes absolutely necessary to use that butte for the line of-sight needs (such as microwave transmission). The remainder of the planning area is open for rights-of-way development. Corridors designated in the 1985 RMP have not worked because of the scattered public land surface. In the Pumpkin Buttes area, communication sites and utilities are allowed only on the South Middle Butte (250 acres) until that butte has been fully used as a communication site. Proposals are addressed on an individual basis with an emphasis on avoiding conflict or sensitive areas.

From 1985 to 1994, about 80 miles of roads, 60 miles of pipelines, 150 miles of power lines, and 5 communications sites have been built in the area annually. About 20% of this activity has occurred on public land surface. This level of activity is expected to remain constant from 1991 through 2005.

Public lands having agricultural potential and water are considered for disposal by sale, exchange, or desert land entry. Agricultural trespass on public land is usually solved through negotiation; however, land sales or leases can also resolve agricultural trespass in some cases. Between 1991 and 2005, we estimate agricultural trespass to occur on about 600 acres in the resource area.

Recreation and Public Purpose (R&PP) Use

Management objective: Provide outdoor recreational opportunities on BLM-administered public land while providing for resource protection, visitor services, and the health and safety of public land visitors.

Management decisions: R&PP applications will be considered for recreation purposes. Uses that are not compatible with each R&PP will not be allowed. Since 1985, R&PPs have been granted for the Buffalo Rifle Range, Sheridan Recreation Complex, and Buffalo Green Belt. Since all existing R&PPs have been patented (deeded to the applicant), the surface owner has control over the activities occurring in the area in conformance with the R&PP patent. Between now and 2005 three R&PP applications are anticipated.

Withdrawals

Management objective: Support management of other resource programs and other Federal agencies.

Management decisions: Withdrawals for surface and/or minerals will be considered on a case-by-case basis. Withdrawals are used to segregate or reserve lands for a specific purpose or use. A withdrawal can also transfer jurisdiction of a tract of land under our jurisdiction to another federal agency. Withdrawals within the planning area also serve to segregate the public lands from operation of the public land laws including the mining laws but not the mineral leasing laws. Land withdrawals are extremely important in supporting other resource programs.

There are several withdrawals in the planning area: stockdrive withdrawals, military withdrawals, public water reserves, Bureau of Reclamation (BOR) withdrawals, wildlife refuge withdrawals, powersite withdrawals, and public housing withdrawals.

The most predominant withdrawals are the stockdrive withdrawals (about 28,700 federal surface acres). These withdrawals were reserved under secretarial orders and set aside for livestock trailing. The largest of these is the Mayoworth Stockdrive located west of Mayoworth, Wyoming.

Military withdrawals in the planning area are Fort MacKenzie (military training area) and the Veterans Hospital (about 4,000 acres), located west of Sheridan, Wyoming. We have no administrative authority for surface uses on these withdrawal areas.

The BOR has several powersite withdrawals and public water reserves (about 13,000 acres) that were set aside for various uses including reservoir sites, dam sites, flood control sites, and power generation sites. They are scattered over the resource area with the majority in northeastern Sheridan County and northwestern Campbell County along the Powder River. The BOR has recommended that about 11,000 acres of these withdrawals be relinquished. We have field-examined them, and they were recommended for revocation in 1982. As of yet, no formal action has been taken to revoke these withdrawals. These are currently on file in the Wyoming BLM state office pending future action.

The Amsden Creek Winter Game Range located approximately 3 miles west of Dayton, Wyoming is a wildlife refuge area withdrawal (about 3,500 acres). This withdrawal is managed as a wildlife protective area by the WGFD through a cooperative agreement.

The Middle Fork recreational withdrawal (about 11,000 acres) is located west of Kaycee, Wyoming. It protects the Middle Fork area from mineral entry because this area has unique visual qualities, wildlife habitat, fisheries, and general outdoor recreational qualities.

The smallest withdrawal in the area is the public housing withdrawal in the middle of Buffalo, Wyoming. This area was withdrawn so that the Buffalo Housing Authority could use the five-acre tract as public housing for senior citizens.

Disposal Areas

Approximately 138,700 acres of public lands that are more difficult or less economic to manage than most BLM-administered public lands have priority consideration for exchange, public sale, or transfer of jurisdiction to another agency (map 5). These lands are small, isolated parcels which are less economic to manage than larger blocks of public land and have been identified as being potentially suitable for disposal. Resources such as archeological values, historic values, and wildlife values could cause the lands to be retained. Small parcels of BLM-administered public lands which are part of a large federal grazing allotment are generally efficient to retain and manage (appendix F).

Acquisition Areas

Priority is given to acquiring public land in areas adjacent to major blocks of public land, especially in areas of high recreational potential like the south Big Horn Mountains. The lands that would be acquired by exchange, easement acquisition, or other means are inventoried for hazardous substance and a past history of contamination. **Any lands known to be contaminated with hazardous substances are not acquired** (appendix F).

Exchanges

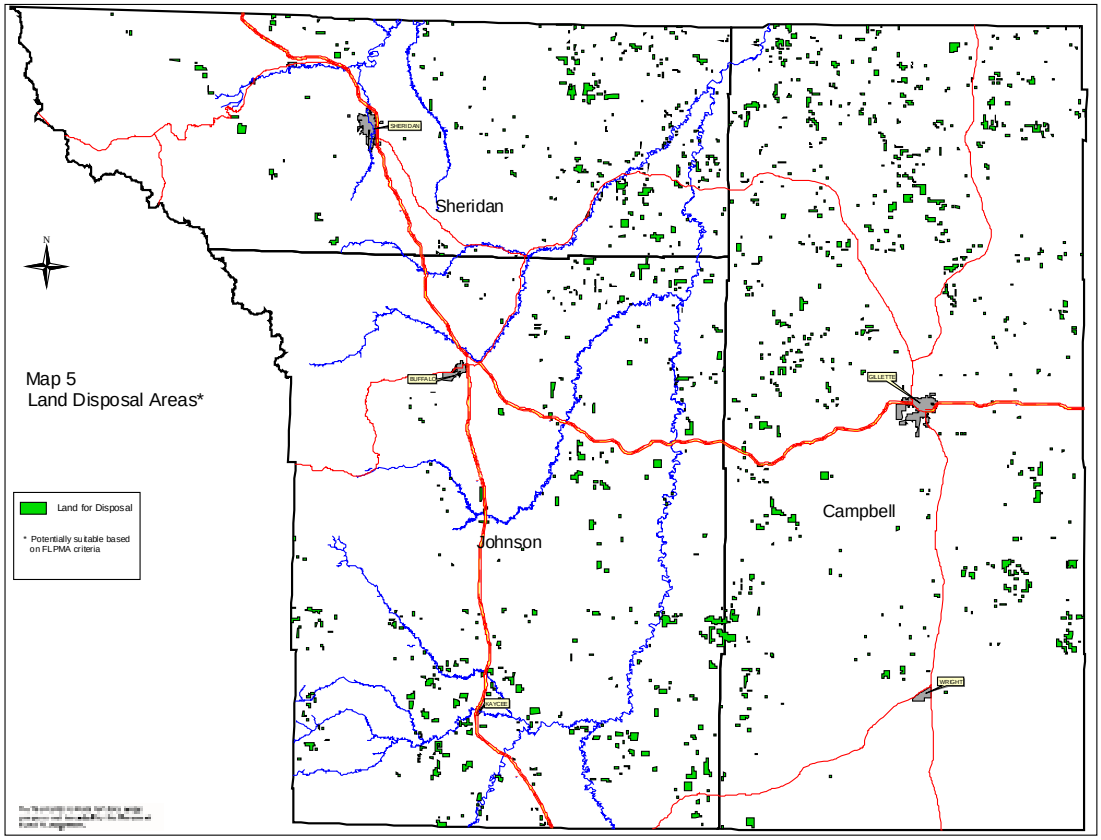
Land tenure adjustments through exchanges serve several purposes. Exchanges help to block up smaller isolated parcels of public land into larger more manageable units. They must benefit the public as well as the private landowner involved. The most beneficial exchanges are those which block up the private lands and the public lands into more manageable units and provide access to larger blocks of public land which were previously inaccessible. Exchanges are used to acquire high resource value lands and to reduce management burdens on other parcels. Exchanges can also be used for the sole purpose of acquiring access.

Easements

Easements that will provide access to better blocks of public lands for recreation and administrative purposes will continued to be pursued. A transportation plan is updated based on opportunities listed in the 1985 RMP. In the past, easements across private and state lands were acquired for forest management purposes; however, only one easement out of the 15 priority areas identified for acquisition in the 1985 RMP has been purchased (Poison Creek).

Easements have been acquired to provide recreational opportunities and to enhance management for interpretive values in the Outlaw Cave, Billy Creek, Petrified Tree, and Poison Creek areas.

LIVESTOCK GRAZING MANAGEMENT DECISIONS


Map 5
Land Disposal Areas*
Land for Disposal
* Potentially suitable based on FLPMA criteria
N
Sheridan
Johnson
Campbell
SHERIDAN
BUFFALO
GILLETTE
WRIGHT
KAYCEE

Management objective: Maintain or improve forage production and range condition to provide a sustainable resource base for livestock grazing on the public lands while improving wildlife habitat and watershed.

Management decisions. Livestock grazing is not authorized on about 4,000 acres of public land located in the canyons and slopes of the southern Big Horn Mountains because of the rough terrain and steep slopes. Livestock grazing is allowed on all public lands in the resource area except on about 6,000 acres (1%) where it has been determined to be incompatible with other resource uses or values. Areas closed to livestock grazing due to conflicts with other resource uses include some timber sale areas when these lands are being revegetated following harvests, and public lands within the Taylor, Kerns, and Amsden big game winter ranges. Developed recreation sites such as picnic areas, campgrounds, and the Petrified Tree Environmental Education Area are also closed to livestock grazing.

Livestock grazing use authorized on BLM-administered public lands has averaged 110,000 animal unit months (AUMs) yearly on about 400 grazing allotments and stock driveways. Information on annual grazing use authorizations on allotments and stock driveway use is available through the grazing authorization billing system (GABS) data base. This database is maintained at the Buffalo Field Office. Based on past demand for livestock feed from all landownerships, anticipated feed demand from 1991 to 2005 would be about 2.9 million AUMs annually. Forage produced from the public lands would contribute about 110,000 AUMs (4%) of the feed requirements.

Any permanent increases in the amount of forage produced are considered for wildlife and watershed protection before additional livestock use is authorized. The level of livestock use authorized on the allotments is determined by BLM specialists in consultation with the grazing lessee and other affected interests using inventory and monitoring information. Adjustments of grazing on commercial forestland could be made where productivity or regeneration is impaired. Allocation of increases of available forage is first allocated to wildlife to meet population objectives of the Wyoming Game and Fish Department (WGFD). If not needed for wildlife or watershed protection, the forage would be made available for livestock.

Management actions on grazing allotments are prioritized based on the classification of the allotments into one of three management categories: maintain (M), improve (I), and custodial (C). These categories broadly define our management objectives for the BLM-administered public lands in the allotment. The priority order for management actions on the allotments are "I," "M," and "C." There are 33 "I" category allotments, 75 "M" category allotments, and 313 "C" category allotments in the Buffalo Field Office Area. Slightly over 70% of the public land in the resource area are in the "M" and "I" management categories.

Grazing lessees and other interested parties are consulted and cooperated with to implement

various grazing management practices and other actions including vegetation and land treatments, water developments, and fence building. BLM policy stipulates that priority be given to management actions that are developed through activity plans such as allotment management plans (AMPs) and coordinated resource management plans (CRMPs). From 1985 through 1999, 15 AMPs have been developed and implemented on about 85,000 acres of BLM-administered public land. Activity plans are predicted to continue to be developed on about one "I" category allotment per year from 1991 to 2005. Employees at the Buffalo Field Office evaluated 25 allotments for conformance with the Wyoming rangeland health standards in 1998. Twenty four of the allotments evaluated were determined to be meeting the standards. Twenty acres of one 400-acre stock driveway allotment did not meet one of the range health standards.

According to the Department of the Interior's final rule for grazing administration, effective August 21, 1995, the Wyoming BLM State Director is responsible for the development of standards for healthy rangelands and guidelines for livestock grazing management. These were approved on August 12, 1997, by the Secretary of the Interior (appendix B).

Fences will be constructed to maintain wildlife mobility in important habitat areas. Fences on public land that are hindering natural movement of wildlife will be modified to conform with BLM standards. Where variance from BLM standards are proposed, the wildlife biologist, in consultation with the WGFD, reviews and authorizes the change. Priority is given to fences that are restricting the greater numbers of wildlife in, or near, calving and fawning areas or crucial winter areas. Affected parties are consulted before modifying fences to ensure a mutual understanding of the need for the change and for establishing acceptable fence standards. Since 1985, about 329 miles of new fence have been constructed and about .1 mile modified or reconstructed annually. About 10% of this was on BLM-administered public surface. An average of 33 miles of new fence is expected to be constructed annually through 2005, of which about 10% of this would be on BLM-administered public surface.

Reservoirs, wells, troughs and pipelines will be constructed to provide water in dry areas and to disperse grazing use. The grazing lessee or other cooperator will be required to maintain water in all troughs located on public land during the frost-free period (April through October) for wildlife. The troughs are equipped with small mammal and bird access/escape ramps and with overflow pipes that discharge water at least 50 feet away from the trough. Since 1985 about 10 reservoirs, 15 springs, 70 miles of pipeline, and 40 wells have been constructed annually, of which about 10% was on BLM-administered public lands. An average of about 5 reservoirs, 15 springs, 50 miles of pipeline, and 30 wells are expected to be constructed annually through 2005, of which about 10% of this will be on BLM-administered public surface (appendix B).

OFF-HIGHWAY VEHICLE (OHV) MANAGEMENT DECISIONS

Management objective: Provide outdoor recreational opportunities on BLM-administered public land while providing for resource protection, visitor services, and the health and safety of

public land visitors.

Using motorized off-highway vehicles requires no fee and no permit, but their use is restricted depending on whether the area has been designated closed, limited, or open. Until on-the-ground signing has occurred, OHV use in all areas designated as limited or limited to designated roads and trails will be limited to existing roads and vehicle routes.

ORV travel will be prohibited on wet soils and on slopes greater than 25% if damage to vegetation, soils, or water quality would result. ORV designations have been made for all public lands in the planning area **(table 3);** however, only the Middle Fork recreation area, the Fortification Creek WSA, and the Weston Hills recreation area have been signed.

Signs indicating ORV designations as limited use, open, or closed have been placed over a small portion of the BLM-administered public lands (table 3). The Middle Fork, Fortification Creek, Gardner Mountain, and Weston Hills areas are the only limited ORV use areas that have been signed to reflect the actual designations. **On areas designated as limited to "designated" roads and trails, ORV travel will be restricted to marked roads. Until actual roads and trails are marked on the ground travel will be restricted to existing roads and trails. Over-the-snow vehicles will be subject to the same requirements and limitations as all other vehicles.**

PALEONTOLOGY RESOURCES MANAGEMENT DECISIONS

Management objective: Manage paleontological resources that are part of the BLM-administered public land surface estate for their informational, educational, scientific, public, and recreational uses.

Management decisions: Using the land for scientific purposes such as paleontological exploration is authorized through a permit system. Since 1985, 53 permits have been issued, and it is expected that about 12 more would be issued between 1991 and 2005.

Fossils are part of the surface estate. Simply stated, whoever owns the surface owns the fossils.

A paleontological collecting permit is required before collecting any fossil vertebrates, significant fossil invertebrates, and plants on BLM-administered public lands.

Potential effects on paleontological resources on BLM-administered public land will be considered in site-specific environmental analyses before authorizing surface-disturbing activities. Site-specific inventories will be required where significant fossil resources are known or are anticipated to occur on BLM-administered public land.

TABLE 3
OFF-ROAD VEHICLE DESIGNATIONS FOR CAMPBELL, JOHNSON, AND SHERIDAN COUNTIES

		Acreage	Total Acreage
Open Areas: Vehicle travel is permitted both on and off roads if the vehicle is operated responsibly in a manner unlikely to cause significant undue damage to the environment.	Stock driveway and rests South of I-90 at the junction of the Powder River	16,746 3,640	20,386
Closed Areas: Travel by vehicles, including snowmobiles, is prohibited in these areas.	Middle Fork Canyon 6 miles southwest of Barnum Cantonment Reno 20 miles northwest of Kaycee Dry Creek Petrified Tree EEA 9 miles east of Buffalo	3,038 572 40	3,650
Limited Areas A: Use is limited to roads and vehicle routes in existence as of 1985 (see **NOTE** below).			566,184
Limited Areas B: Use is limited to designated roads and vehicle routes within these areas. (Until signs are posted, vehicle travel is limited to existing roads and vehicle routes.)	North Fork of the Powder River 10 miles north-west of Mayoworth Gardner Mountain area 10 miles north of Barnum, including the Gardner Mountain WSA Red Wall from near Barnum to the county line Middle Fork Management Area Petrified Forest north Dry Creek Petrified Tree EEA Fortification Creek area, including portions of the Fortification Creek WSA Powder River Breaks 26 miles east of Buffalo; north and south I-90 near Powder River Sections of the Bozeman Trail in central and southern Johnson County Dry Creek area near Rocky Point in northwest Campbell County Weston Hills 29 miles north of Gillette Little Powder River area 18 miles and 43 miles north of Gillette Whitetail area in north-central Campbell County Pumpkins Buttes in southwest Campbell County	16,453 28,832 5,442 30,640 427 41,267 25,827 645 7,080 6,870 3,040 2,880 1,600	170,982
Limited Areas C: Vehicle travel is closed to all motor vehicles including snowmobiles from December 1 to April 15.	North Fork Powder River area 10 miles north-west of Mayoworth, including portions of the North Fork WSA Barnum Mountain 6 miles west of Barnum A portion of the Middlefork Management area 12 miles southwest Barnum Fortification Creek area, including a portion of the WSA	16,432 2,800 6,800 11,614	37,646
Total Campbell, Johnson, and Sheridan Counties			**798,848**

NOTE: Vehicle travel off of existing vehicle routes is permitted only to accomplish **necessary tasks** and only if such travel does not result in **resource damage. Necessary tasks** are defined as work requiring the use of a motor vehicle. Examples of necessary tasks include picking up big game kills, managing livestock, repairing range improvements, and mineral activities where surface disturbance does not total more than five acres as described under 43 CFR 3809. **Resource damage** is defined as leaving long-term signs of vehicle use (ruts), causing erosion or water pollution, or creating undue degradation of other vegetative or wildlife resources.

Collection of invertebrate fossils and petrified wood are allowed except in llection of invertebrat paleontological resources are evaluated case-by-case.

RECREATION RESOURCES MANAGEMENT DECISIONS

Management objective: Provide outdoor recreational opportunities on BLM-administered public land while providing for resource protection, visitor services, and the health and safety of public land visitors.

Management decisions: Casual use of the BLM-administered public land for hiking, bicycling, hunting, fishing, and similar uses are allowed without charge. Camping is limited to 14 days at any one spot. Recreational use in 1990, measured in visitor days, for various activities is shown in table 4. BLM-administered public lands support about 3% of the recreational use in the resource area. The overall demand for recreation in the planning area would increase by about 5% every five years for most recreational activities.

Special recreation permits (SRPs) are issued for commercial competitive and large-scale nonprofit organized recreational events on a case-by-case basis. For commercial operations a fee is charged; for nonprofit endeavors the permit is free.

Between 1985 and 1995, 225 permits were issued for such things as big game outfitting, mountain bike races, and museum fund raisers. In 1990 alone, 30 permits were issued. About 35 permits are projected to be issued annually between 1991 and 2005.

Provide Hunter Information

Management objectives: BLM's goal is to provide services to the visiting public by making the public lands more accessible while sustaining the lands' health for present and future generations and while respecting the property rights of our neighbors. To do this, improvements or activities are identified that can be done as cooperative projects. The projects are evaluated in an EA to identify requirements to protect sensitive or unique resource values.

BLM strives to enhance opportunities for primitive recreation while increasing visitor services in some areas to meet needs for more developed forms of recreation.

BLM personnel have been involved in various activities to provide hunter information since the early 1980s. In cooperation with other agencies such as the WGFD and local chambers of commerce, the information provided has included maps, access policy information, hunting and land regulations, and information about private and BLM-administered public lands.

TABLE 4
RECREATION VISITOR DAYS - 1990
BUFFALO FIELD OFFICE AREA

Type of Visitor Use	Resident Visitors			Nonresident Visitors			Total Visitor Days		
	NonBLM	BLM	Total	NonBLM	BLM	Total	NonBLM	BLM	Total
Consumptive Use									
Antelope	4,503	261	4,764	12,263	837	13,100	16,766	1,098	17,864
Deer	49,195	3,042	52,237	39,980	3,861	43,841	89,175	6,903	96,078
Elk	102,421	2,139	104,560	12,449	272	12,721	114,870	2,411	117,281
Small Game	8,000	200	8,200	400	100	500	8,400	300	8,700
Fishing	300,000	3,000	303,000	75,000	1,000	76,000	375,000	4,000	379,000
Total Consumptive Use	464,119	8,642	472,761	140,092	6,070	146,162	604,211	14,712	618,923
Nonconsumptive Use	578,000	15,440	593,440	652,000	17,400	669,400	1,230,000	32,840	1,262,840
Total Visitor Use	1,042,119	24,082	1,066,201	792,092	23,470	815,562	1,834,211	47,552	1,881,763

Source: WGFD 1990. Estimates by BLM personnel, Buffalo Field Office.

The hunter patrols and "Operation Respect" stations have helped hunters in the field to identify public land locations and to respect private lands. These services have also provided information on conditions and services available to nonresident hunters with little knowledge of the area.

Between 1989 and 1993, hunting access brochures were mailed out to all nonresident hunters that have visited the resource area. A *Hunter Vista* newsletter is mailed annually to nonresident hunters coming to Johnson County by the *Buffalo Bulletin* and the Buffalo Chamber of Commerce.

South Big Horns Area

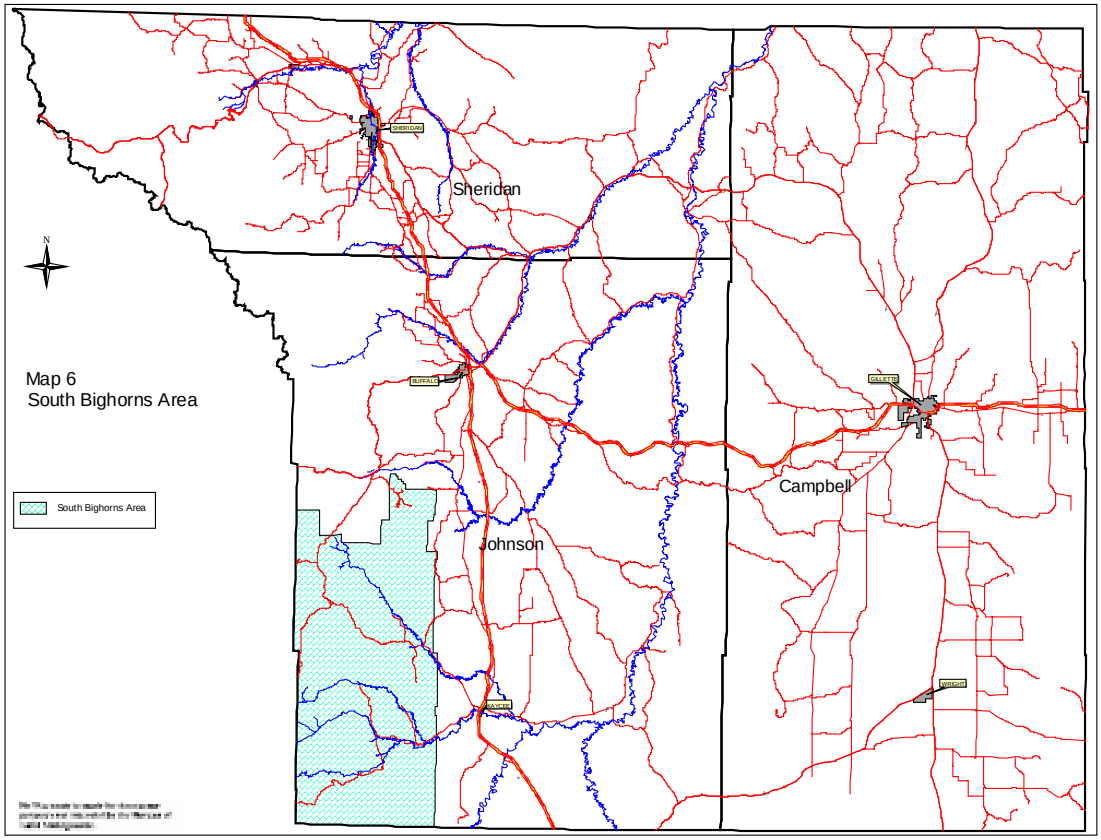
Management objective: Ensure continued public use and enjoyment of recreation activities while protecting and enhancing natural and cultural values; improve opportunities for high quality outdoor recreation; and, improve visitor services related to safety, information, interpretation, and facility development and maintenance.

BLM's management objectives specifically for the south Big Horns area are to complete on-the-ground ORV signing; to implement an access plan; to initiate a use census; to exchange lands to consolidate public ownership; to acquire access; and, to conduct level III cultural surveys.

Management decisions: The east slope of the south Big Horns encompasses about 20 townships south of the Bighorn National Forest to the Natrona County line as shown on map 6. Within this area are many sensitive and unique resource values: fisheries, wetlands, and riparian areas; cultural; elk, deer, and antelope habitat; and wilderness and scenery. Several site plans and one memorandum of understanding (MOU) already exists for managing these values. Following is a summary of current management for the area.

BLM's major goal in the south Big Horns area is to protect those values mentioned above while maintaining compatible multiple use activities. This is done by controlling visitor use, maintaining coniferous forest stands, controlling access during hunting, prohibiting surface disturbance or occupancy in the Red Wall/Hole-in-the-Wall area and within ½-mile of the rim of Middle Fork Canyon, obtaining additional mineral withdrawals in the Middle Fork of the Powder River area, and prioritizing additional lands for potential acquisition or exchange.

BLM's goal regarding wildlife values are to provide sufficient forage, cover, and water in helping to support the WGFD's big game population objectives. This is accomplished by improving rangelands, riparian areas, wetlands, and fisheries habitat that are in less than proper functioning condition to good condition. Numerous habitat improvement projects have been completed to date. Those include installing guzzlers, conducting prescribed burns, winter range fertilization, fencing projects, water


Sheridan
Johnson
Campbell
SHERIDAN
BUFFALO
GILLETTE
WRIGHT
MAYOR
N
Map 6
South Bighorns Area
South Bighorns Area

developments, off-road vehicle management, fishery improvements, and aspen regeneration. For an explanation of these terms, please see *Riparian Area Management: Process for Assessing Proper Functioning Condition* (USDI, BLM 1993).

In the Outlaw Cave area and the Dull Knife Battlefield site, management goals are to protect and preserve the cultural and archeological information, to provide for interpretation, and to nominate all significant sites to the National Register. Ideally, the objective for managing these sites is to do it within a multiple-use context; that is, considering all resources in the area. These goals have not been met entirely because private landowners in the area do not want general public access to the battlefield.

BLM's public forestlands management objective is to harvest timber in diseased old-growth and overstocked stands to enhance growing conditions and to assist the local economy through timber harvesting and milling. Impacts to other associated resource values such as wildlife, watershed, and recreation will be mitigated. Public land timber harvest activities are restricted within 200 feet either side of perennial streams. An additional 238 acres (less than 1%) of the commercial forestland base are streamside forestlands.

BLM's management objective for Gardner Mountain and North Fork WSAs is to manage the areas according to the BLM National Interim Management Guidelines until Congress either releases them from further consideration as wilderness or designates them as wilderness.

Continuing goals for these two wilderness study areas include preserving the existing wilderness characteristics of the areas and not allowing activity that would impair the suitability of the areas for preservation as wilderness. Access to the WSAs via existing roads and new construction is planned. A trail would be constructed to the North Fork WSAs if legal access is acquired. A trail has been identified to the Gardner Mountain WSA.

In the south Big Horns area, priority is given to land exchanges which can provide access to large blocks of BLM-administered public lands, to lands with unique resources, or to lands with riparian/wetland values. Private or state lands with high scenic value near well-blocked BLM-administered public lands are also considered very desirable for exchange. Since 1985, four exchanges of lands with high cultural, scenic, and recreational values have occurred.

All wildfires in the area are aggressively attacked and suppressed. However, heavy equipment may not be used to construct fire lines except to protect life and state or private property. More than 2,000 acres have been treated with prescribed fire

with an additional 5,000 acres planned to be treated to 2010.

Since 1985, 90 cultural sites in the Outlaw Cave area have been monitored, one sign has been installed at the Sweem-Taylor Rock Shelter (48JO301), the rock art motifs have been reproduced and photographed, test excavations have been undertaken at three sites, and the Bar C Rock Cairn Alignment (48JO302) has been photographed and mapped in detail. New legislation requiring Native American consultation has helped to obtain Native American interpretation and concerns for managing sites in the area.

In the Middle Fork of the Powder River area, additional trails created by hunters and fishermen will be closed in consultation with adjacent landowners (private, state, and WGFD). ORV designations have been completed and an access plan with desired access routes and desired closures has been written. Visitor use surveys have been completed, and visual classes are mapped. The federal mineral estate beneath state and private surface has not been withdrawn from mining location to protect the important resources.

Surface damage by vehicles used for recreational activities puts soils, vegetation, visual quality, cultural sites, deer, elk, and fisheries at risk. The potential for resource damage is greatest on specific high-use sites having public access.

The quality and quantity of wildlife habitat is at risk where timber harvests and livestock grazing actions are not coordinated with wildlife habitat requirements. There will probably be an increase in recreational homesites in the south Big Horns area.

At both of the archeological site complexes the values at risk are the loss or deterioration of cultural values. Surface uses from ORVs, hunting, fishing, sightseeing, and wildfire threaten the cultural and historical resources. There is no mining activity currently, but the lack of action taken on withdrawing the archeological sites from mining activities puts the sites at risk.

Foot\Horse Trail to Gardner Mountain WSA

The trail route to Gardner Mountain WSA begins at Ice Cave along the Mayoworth Slope Road and ends at Dull Knife Pass Overlook (7 miles). A cooperative agreement with the state of Wyoming is in place which allows access across state land.

Foot\Horse Trail to North Fork WSA

A decision in the 1985 RMP stated that access to the North Fork WSA will be provided by constructing a foot and horseback trail. To date, access across private lands (¼ mile) has not been obtained. Therefore, no trail exists.

Dry Creek Petrified Tree Environmental Education Area

Management objective: Ensure continued public use and enjoyment of recreation activities while protecting and enhancing natural and cultural values; improve opportunities for high quality outdoor recreation; and, improve visitor services related to safety, information, interpretation, and facility development and maintenance.

Management decisions: Preserve the Dry Creek area near its natural state, prevent or slow down deterioration of the petrified trees, and inform the visitor about the area.

An outhouse is planned for the area if use justifies, and a way to protect the largest deteriorating petrified tree will be identified. Surface disturbance or occupancy is prohibited within ½ mile of the site unless waived by the authorized officer. The Dry Creek Petrified Tree Area was set aside as an Environmental Education Area in 1978. The area contains a rehabilitated access road, a parking area, picnic table, interpretive facilities, and fencing to exclude livestock.

Fortification Creek Area

Management objective: Ensure continued public use and enjoyment of recreation activities while protecting and enhancing natural and cultural values; improve opportunities for high quality outdoor recreation; and, improve visitor services related to safety, information, interpretation, and facility development and maintenance.

Management objectives specific to the Fortification Creek area are to allow orderly development of mineral resources while protecting wildlife habitat and watershed areas, and maintaining wilderness values (naturalness, solitude, and primitive and unconfined recreation).

Management decisions: No surface occupancy is allowed in elk calving areas (5,700 acres), and a seasonal timing restriction is applied to elk wintering areas (26,000 acres). It is a requirement that all oil and gas production be piped out of crucial elk winter range and that necessary precautions are taken to protect the highly erosive soils in the area. The area includes the Fortification Creek WSA, crucial elk habitat, and areas of highly erosive soils. Oil and gas drilling has diminished in the Fortification area, and some locations have been reclaimed.

Weston Hills Recreation Area

Management objective: Ensure continued public use and enjoyment of recreation

activities while protecting and enhancing natural values; improve opportunities for high quality outdoor recreation; and, improve visitor services related to safety, information, interpretation, and facility development and maintenance.

Management decisions: Off-highway vehicle use is limited to designated (marked with white arrows) roads. In additions an existing (and marked) foot, horse, and mountain bike loop is open to ATV use (motorized vehicles 50 inches wide or less). The loop trail will be closed to motorized vehicles from September 15 through October 20. This will limit disturbance to wildlife before and during the big game rifle hunting season. Two additional loop trails for foot, horse, mountain bikes, and motorized vehicles 50 inches wide or less will be considered. Development of these trails could take place after monitoring of the area shows that there is a need and that the appropriate analysis is completed.

Mosier Gulch Recreation Area

Management objective: Ensure continued public use and enjoyment of recreation activities while protecting and enhancing natural and cultural values; improve opportunities for high quality outdoor recreation; and, improve visitor services related to safety, information, interpretation, and facility development and maintenance.

Management decisions: In 1987, a picnic area was developed on BLM-administered public lands in Mosier Gulch, which lies west of Buffalo along U.S. Highway 16 at the foot of the Big Horn Mountains. An MOU between BLM, the City of Buffalo, and Johnson County was entered into. **The objective of the MOU is to jointly develop and manage recreational facilities on lands administered by all three agencies in the greater Mosier Gulch area.** As an attachment to the MOU, a number of projects were identified. **Oil and gas leasing and development is not allowed in the area.**

Cantonment Reno Area

Management objective: BLM's management objectives for this site are to preserve significant historic remains and scientific potential, to promote historic research, and to develop an interpretation area to protect and enhance the visitor's awareness of the history of the area.

Management decisions: The area is a no surface occupancy area for mineral development.

Cantonment Reno, located east of Kaycee, was a military post at the Bozeman Trail crossing of the Powder River. Established in 1876, 3 miles upstream from the earlier Fort Reno, the post served as a supply depot and telegraph station until 1878, when the post

was renamed and relocated closer to the Big Horn Mountains. The lands occupied by the post were retained in public (BLM) ownership except for a portion which is on state land. The telegraph station continued in service after the post was moved to Fort McKinney, and a civilian community known as Powder River Crossing grew up on the opposite bank. This site has 518½ acres of public land.

If funding can be obtained, there are cooperative institutions willing to participate in research, stabilization, and interpretive development at this site. A cultural resource management plan was completed for the area in 1985, and a land exchange has been proposed to acquire legal access to that portion of the site not on BLM-administered public land.

Bozeman Trail and Crazy Woman Battle Site

Management objective: BLM's management objectives are to preserve historic values on significant trail segments on BLM-administered public surface and to preserve such values on other segments when affected by federal minerals development (map 7).

Management objectives for the Crazy Woman battle site are to preserve the historic values at the site and to develop cooperative interpretation in partnership with the Wyoming State Parks and Historic Sites. Future management actions include planning and developing an interpretive site and periodic monitoring.

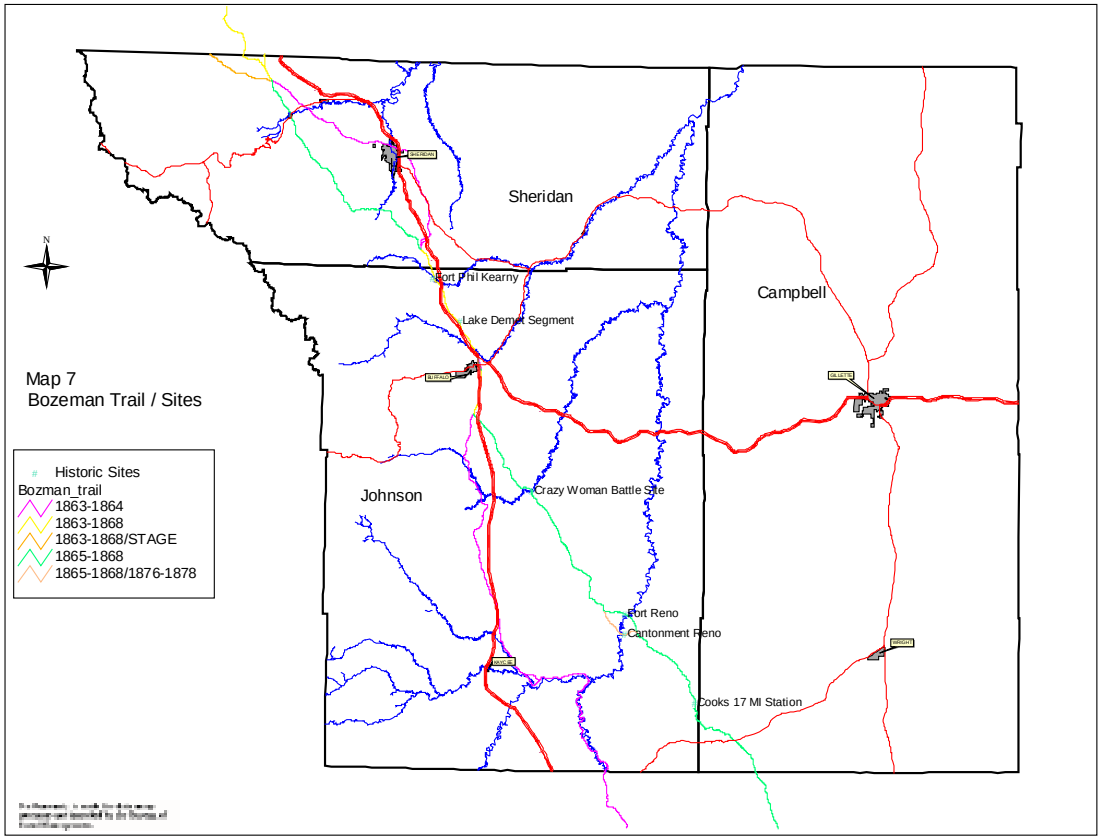
Management decisions: No surface occupancy stipulations will be applied to mineral leases where potentially eligible or significant segments exist (within ¼ mile or visual horizon, whichever is closer, from the Bozeman Trail; map 7).

Where the Bozeman Trail crosses Crazy Woman Creek several conflicts occurred between military supply trains bound for Fort Phil Kearny and Sioux and Cheyenne tribesmen. Three fights occurred in 1867 and 1868. During the 1876 campaign, the site was a staging area for General Crook's troops. The site is located on both federal and state lands.

Any plans for interpretation and development of related sites along the Bozeman Trail will generally follow the state sponsored plan, *Promoting Historical and Cultural Resources Along the Bozeman Trail* (McDermott Associates 1989).

Cooperative Agreements for Hunting Access

There are two special "cooperative hunting areas" in the resource area to provide additional access to public lands and to help prevent trespassing on private lands. One area is near the Powder River between Buffalo and Gillette and contains 9,800 acres of which 4,300 acres are deeded. The other area is south of Kaycee and north of Midwest


Sheridan
Campbell
Johnson
Fort Phil Kearny
Lake Dement Segment
Crazy Woman Battle Site
Fort Reno
Cantonment Reno
Cooks 17 MI Station
N
Map 7
Bozeman Trail / Sites
Historic Sites
Bozman_trail
1863-1864
1863-1868
1863-1868/STAGE
1865-1868
1865-1868/1876-1878

and contains approximately 100,000 acres of which 47,000 are deeded, and 53,000 acres are managed by the BLM and the state. Both areas resulted from the desire of public agencies and private landowners to resolve hunting and access problems. These two areas are excellent examples of cooperation between landowners, BLM, and the WGFD.

There will be an increased need by public land agencies and private landowners to eliminate hunter access problems. As access fees increase on private land, more hunters will demand additional access to public lands. An increase in cooperative access agreements is expected in the future.

BLM will continue to maintain 16½ miles of road every year (Bar C, Billy Creek, Muir, Petrified Tree, and Weston West) and will continue to maintain existing recreation facilities and roads at the same level.

SOIL RESOURCES MANAGEMENT DECISIONS

Management objectives: Maintain soil cover and productivity and provide for improvement in areas where soil productivity may be below potential on BM-administered public land surface.

Management decisions: Timber harvest activities will be limited to slopes of 45% or less to protect the water quality and to keep soil from eroding. Most of the commercial forest lands in the planning area is on slopes under 45% (30,950 acres); 12,450 acres of commercial forest land are on slopes greater than 45%.

Surface occupancy and disturbance will not be allowed on slopes of 25% or more (281,100 acres).

ORV travel will be prohibited on wet soils and on slopes greater than 25% if unnecessary damage to vegetation, soils, or water quality would result. Roads and trails will be closed and reclaimed if they are heavily eroded, washed out, or if access roads in better condition are available. Head seepages on all spring developments on BLM-administered public lands will be fenced.

No surface disturbance or occupancy will be allowed in areas of severe erosion from March 1 until June 15. As they are needed, conservation practices and state of Wyoming best management practices will be applied to surface-disturbing activities. Approximately 1,819,000 acres in the resource area have been identified as having severe erosion.

THREATENED, ENDANGERED, AND CANDIDATE SPECIES PROTECTION

Management objective: 1) Maintain biological diversity of plant and animal species; 2) support WGFD strategic plan population objective levels to the extent practical and to the extent consistent with BLM multiple use management requirements; 3) maintain, and where possible, improve forage production and quality of rangelands, fisheries, and wildlife habitat; and 4) to the extent possible, provide habitat for threatened and endangered and special status plant and animal species on all public lands in compliance with the Endangered Species Act (ESA) and approved recovery plans.

Management decisions: Known populations of threatened and endangered species will be protected as mandated by law. The FWS is the only agency that can list a species as endangered, threatened, or candidate. It is estimated that from 100 to 200 bald eagles winter in the planning area. Bald eagle roosts commonly occur along drainages that have mature cottonwood or coniferous trees. Two bald eagle nests are known to exist on private land in Sheridan County. Surveys conducted by BLM, the WGFD, and the FWS suggest that bald eagle numbers are increasing in the resource area. The bald eagle was recently downlisted from endangered to threatened status after it was determined that the population has rebounded in recent years.

Surface disturbance or occupancy will not be allowed within ½ mile of communal winter roosts for bald eagles from November 1 through March 30. Documented nest sites, roosts, cottonwood trees, and other potential critical habitats related to hunting and concentration areas for bald eagles will also be protected.

Peregrine falcons may migrate through the planning area; however, there are no known nest sites. There is potential peregrine habitat in the south Big Horn Mountains area in canyons such as the North Fork and Middle Fork of the Powder River, Beaver Creek, Buffalo Creek, and the Red Fork of the Powder River.

No reports of black-footed ferrets have been confirmed in the planning area, but several unconfirmed sightings have been reported by the WGFD. Black-tailed prairie dogs, which are potential ferret habitat, are found on about 2,000 acres of public land in the resource area. Prairie dog populations have been eliminated on private land by poisoning programs conducted by landowners and weed and pest districts. Sylvatic plague, a fast-spreading disease which has been known to kill large numbers of prairie dogs, has also occurred in the resource area. Each year, many prairie dog hunters request access from landowners and federal agencies in the planning area to pursue recreational shooting activities. The majority of these recreational prairie dog hunters are against poisoning programs (USDI, BLM 1982). Two to three black-footed ferret surveys are conducted each year in the planning area mainly in association with oil and gas leasing.

The whooping crane may migrate through the planning area, but there are no known whooping crane habitats.

Sensitive Plants

Management objective: 1) Maintain biological diversity of plant and animal species; 2) support WGFD strategic plan population objective levels to the extent practical and to the extent consistent with BLM multiple use management requirements; 3) maintain, and where possible, improve forage production and quality of rangelands, fisheries, and wildlife habitat; and 4) to the extent possible, provide habitat for threatened and endangered and special status plant and animal species on all public lands in compliance with the Endangered Species Act (ESA) and approved recovery plans.

Management decisions: BLM will protect known populations of rare or sensitive plants as required under the same laws as for threatened and endangered animals. The Nature Conservancy, under contract to the BLM, has conducted several surveys for sensitive plants in the resource area. No plants have been found in the resource area that are on the threatened or endangered Species list. A population of *Spiranthes diluvialis* (Ute ladies' tresses), Wyoming's only listed threatened plant species, was discovered in northern Converse County in 1994, not far from the southeastern border of the resource area.

Information, including a complete description of survey locations, habitat characteristics, abundance, and identification characteristics of these sensitive plants is available at the Buffalo Field Office.

VEGETATION RESOURCES MANAGEMENT DECISIONS

Vegetative Treatments

Management objective: Maintain or improve the diversity of plant communities to support timber production, livestock needs, wildlife habitat, watershed protection, and acceptable visual resources; and reduce the spread of noxious weeds.

Management decisions: Vegetation treatments, including timber harvesting and sagebrush spraying or burning, will be designed to meet overall resource management objectives and will be consistent with the policy to protect or improve biodiversity and water quality.

Prescribed burns will be conducted to support vegetation and wildlife habitat objectives. Fire is used as a management tool to improve range forage production, wildlife habitat, timber stand improvement and sale debris disposal, and to reduce hazardous fuel buildup.

Livestock grazing strategies on vegetative treatment areas generally include rest

the first year following treatments and deferment of livestock grazing the second year. Rangeland treatments such as prescribed burning are developed or applied in "I" and "M" category grazing allotments using range betterment funds and private investment. Projects that primarily benefit livestock grazing are authorized on "C" category grazing allotments; funding is provided by the grazing lessee.

Since 1985, prescribed burning has been done on about 25,000 acres of rangelands, of which 8% is on BLM-administered public surface. About 50,000 acres of prescribed burning will be conducted in the planning area through 2005, of which 10% will be on BLM-administered public surface.

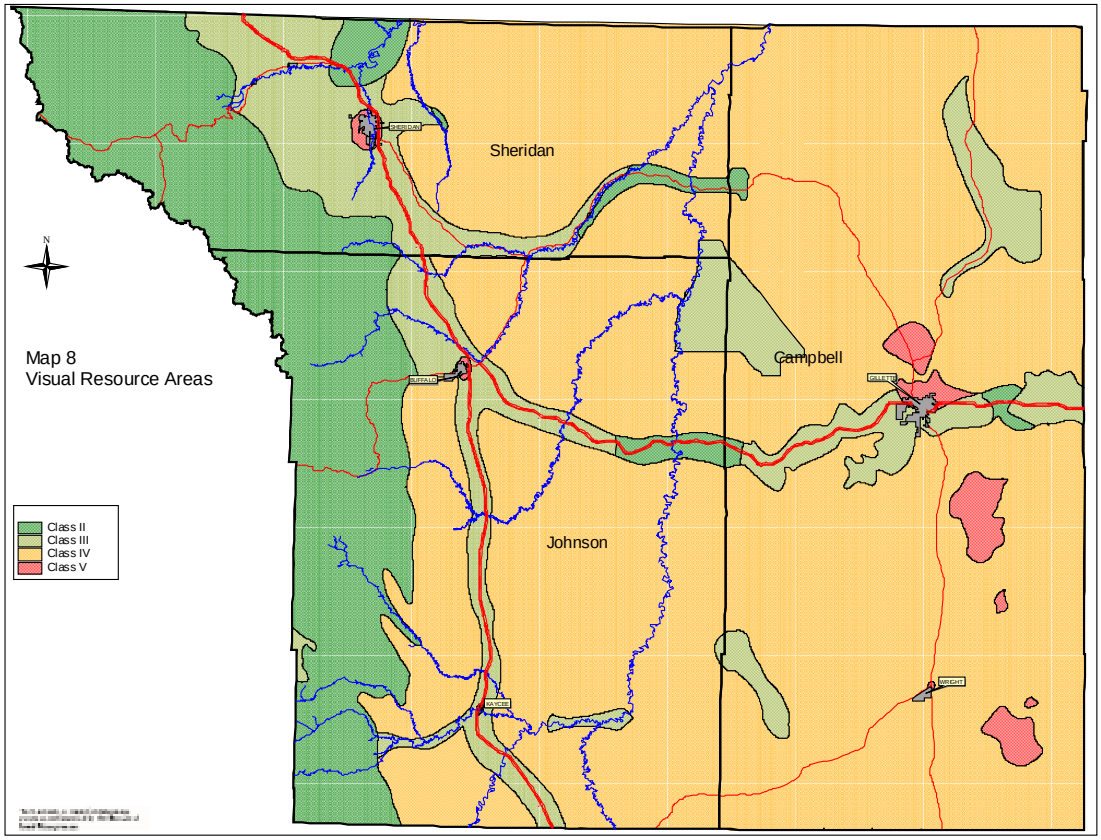
In cooperation with county weed and pest districts, cooperative integrated weed control programs are being implemented on public land in conjunction with control work on adjoining deeded and state lands. Since 1985, about 100 acres (less than 1% of the total) of noxious weeds on public land have been treated annually with chemical herbicides applied under contract by the county weed control districts. Four biological control projects (about 400 acres), including prescribed grazing by livestock and release of insects, are maintained on public land. This level of control is expected to increase by 10% through 2005.

Trees will be planted on timber harvest areas that fail to regenerate naturally to minimum stocking levels within five years after completing harvest and rehabilitation activities. Precommercial tree thinning will be initiated on overstocked releasable seedling and sapling size stands. Approximately 200 acres have been thinned since 1985, and about 200 acres have been planted annually through 1994. The acreage thinned and planted is expected to be around 100 and 40 acres, respectively, through 2005.

VISUAL RESOURCES MANAGEMENT DECISIONS

Management objective: Maintain or improve scenic values, visual quality, and establish visual resource management priorities in conjunction with other resource values.

Management decisions: Visual resources are managed in accordance with objectives for visual resource management (VRM) classes that have been assigned to the planning area (map 8). No activity or occupancy is allowed within 200 feet of the edge of state and federal highways. Facilities or structures such as power lines, oil wells, and storage tanks are required to be screened, painted, and designed to blend with the surrounding landscape except where safety indicates otherwise. Any facilities or structures proposed in or near WSAs will be designed so as not to impair wilderness suitability.


Sheridan
Campbell
Johnson
SHERIDAN
BUFFALO
GILLETTE
KAYCEE
WRIGHT
N
Map 8
Visual Resource Areas
Class II
Class III
Class IV
Class V

WATERSHED AND WATER RESOURCES MANAGEMENT DECISIONS

Management objectives: Maintain or improve surface and groundwater quality consistent with existing and anticipated uses and applicable state and federal water quality standards; provide for availability of water to facilitate authorized uses, and to minimize harmful consequences of erosion and surface runoff from BLM-administered public land.

No surface disturbance will be allowed within 500 feet of any spring, reservoir, water well, or perennial stream unless waived by the authorized officer. Pollution prevention plans are developed for actions that qualify under the Wyoming Storm Water Discharge Program to reduce the amount of nonpoint pollution entering waterways. Please see appendix B for more information.

The rights to water-related projects on public lands will be filed with the Wyoming state engineer's office in order to obtain valid water rights. Mineral exploratory wells and drill holes that produce water are occasionally acquired. These acquired wells are developed for multiple-use purposes if they meet criteria for water well conversion. Water wells and watershed projects that are no longer functioning or serving their original purposes are reclaimed and abandoned as appropriate.

WILDLIFE HABITAT MANAGEMENT DECISIONS

Management objectives: 1) Maintain biological diversity of plant and animal species; 2) support WGFD strategic plan population objective levels to the extent practical and to the extent consistent with BLM multiple use management requirements; 3) maintain, and where possible, improve forage production and quality of rangelands, fisheries, and wildlife habitat; and 4) to the extent possible, provide habitat for threatened and endangered and special status plant and animal species on all public lands in compliance with the Endangered Species Act (ESA) and approved recovery plans.

Management decisions: The specific stipulations that place restriction on the surface and mineral uses of public lands are listed under "Special Attention Areas" or "Areawide Resource Management" sections.

Big game and fisheries management levels identified in the WGFD's 1990-1995 strategic plan are supported by the BLM (WGFD 1990). BLM cooperates with the WGFD in introducing or reintroducing native and acceptable nonnative wildlife and fish within the planning area where potential habitat exists. Accommodating changes to WGFD planning objectives are considered based on habitat capability and availability. Wildlife habitat is monitored and population adjustments and habitat improvements are recommended to the WGFD, as appropriate.

High priority grazing allotments are monitored to evaluate range condition and dietary overlaps between domestic livestock and big game during winter and spring (appendix B).

Approximately 65 miles of BLM-administered stream habitat are managed for game fish; 11 additional miles of BLM-managed stream habitat are managed for nongame fish. BLM works with the Fish and Wildlife Service (FWS) and the WGFD in evaluating and designating critical habitat for threatened and endangered species on public land.

Wildlife habitat use is expected to decrease between 1991 and 2005 due to the cumulative effects of human-related activities on wildlife habitats.

Constructing islands in reservoirs, improving riparian vegetation by planting and grazing management, and installing nesting structures to improve waterfowl production and security areas near reservoirs will be encouraged. Waterfowl nesting and rearing habitat is improved on about five reservoirs that regularly produce young during normal and wet years.

Reservoirs and riparian areas are sometimes maintained to improve or enhance potential fisheries. Designing reservoirs to enhance fisheries where potential exists will be encouraged. Coal bed methane wells could increase fishery potential.

Big Game Ranges

Management decisions: No surface disturbance and occupancy is allowed on the WGFD's four big game ranges unless waived by the authorized officer (table 5). The BLM-administered public lands in the Ed Taylor and Amsden Creek game ranges have been withdrawn for locatable minerals. The wildlife units have low potential for oil and gas. Coordinated habitat management projects between the BLM and the WGFD have taken place on the Ed Taylor game range to include fertilization, fences, controlled burning, and signing. Management of the game ranges comes under the master MOU between the WGFD and BLM.

Buffalo Wetland and Riparian Areas

Management decisions: Riparian areas and wetlands in less than proper functioning condition will be improved. The goal is to either create, improve, or maintain existing riparian and wetland areas for waterfowl such as ducks, geese, and shorebirds; warm- and cold-water fish; and other wildlife species that depend on these areas for their health and well being.

TABLE 5

BIG GAME RANGES IN THE PLANNING AREA

Game Range	Total Acres	BLM-administered Surface Acreage	Federal Mineral Acreage
Ed O. Taylor	10,000	4,000	9,960
Bud Love	6,000	0	420
Amsden	3,000	560	1,160
Kerns	5,000	120	2,720
Total acres	24,800	4,680	14,260

The preferred method for improving riparian habitat is by developing cooperative grazing systems thus allowing streams and wetlands to return to a proper functioning condition.

Other methods may include water development, fencing, and herding. By 2005, our goal is to improve 5 miles of riparian habitat and maintain 70 miles in proper functioning condition.

Riparian areas and wetlands on BLM-administered public lands are a valuable resource that constitute less than 1% of the total acreage managed by the BLM. An initial survey of riparian areas conducted in 1994 found that approximately 70 miles of riparian areas along streams (600 acres) were in proper functioning condition. There were 3 miles and 16 acres in "functioning at risk" condition, and 2 miles and 4 acres in "nonfunctioning" condition. More detailed studies are needed to evaluate specific vegetative, hydrologic, and soils information before a final analysis can be completed. For an explanation of these conditions, please see *Riparian Area Management: Process for Assessing Proper Functioning Condition* (USDI, BLM 1993).

Any study exclosures or other special exclosures such as riparian and wetland sites on springs and streams are closed to livestock grazing. Surface disturbance is not allowed within 500 feet of surface water including springs, reservoirs, water wells, and perennial streams (about 19,000 acres). About 65 acres of wetland and riparian sites on BLM-administered public lands in the area have been closed to livestock grazing since 1985.

<u>Elk Habitat</u>

Management decisions: Timber harvest activities are not allowed in areas where critical elk habitat occurs or where hiding cover is insufficient to meet the minimum needs of this species (about 8,000 acres).

Surface disturbance or disruptive activity is not allowed in crucial elk winter range

(11,045 acres) between November 15 and April 30, and in elk calving areas (5,700 acres) from May 1 to June 30, when necessary.

Raptor and Grouse Breeding Areas

Management decisions: Surface occupancy or disturbance is not allowed on approximately 6,000 acres in the study area to protect important raptor, sharp-tail grouse, and sage grouse habitat. An additional 430,700 acres may be restricted from surface-disturbing activities during the breeding and nesting period (February 1 to July 31). Buffers are established with radii from 250 yards to ½ mile for sharp-tailed grouse dancing grounds from April 1 through May 30. The buffers for sage grouse strutting grounds (leks) vary from ¼ mile radius to 1¾ miles from March 1 to June 15. The field office manager can approve exceptions, modification, or waivers to this restriction. An exception to the timing stipulation would be written if raptor nests or grouse leks were inactive, or if distance and topographic screening mitigates disturbance to these species.

Surface disturbance or occupancy is not allowed within ½ mile of communal winter roosts for bald eagles from November 1 through March 30. Surface disturbance will not be allowed around "biologic" buffer zones delineated for eagle roosts from November 1 through March 30.

Animal and Insect Damage Control

Management decisions: No animal damage control is allowed on BLM-administered public lands unless a need for control is determined. The US Department of Agriculture, Wildlife Services is the only agency approved to control predators on public lands. Their relationship with the BLM and control measures were analyzed in the *Environmental Assessment for Predator Damage Management in Eastern Wyoming (USDA*, APHIS n.d.). The decision record for that document was signed January 23, 1998 (USDA, APHIS 1998). Part of this process includes preparing an annual report and a proposed work plan for the year. Predator control on public land is done in accordance with the above documents.

BLM cooperates with APHIS to control grasshoppers and Mormon crickets on public lands in conjunction with the control efforts initiated on adjoining nonfederal lands. Based on the cyclic occurrence of economically significant densities of the insects, about 25,000 acres of public lands out of a total of 300,000 acres of all ownerships are treated with chemicals once over a 10- to 15-year period to control grasshoppers. Biological control is also used in some isolated areas.

Rodents like prairie dogs will be controlled by APHIS on BLM-administered public

lands. Since 1985, no rodent control projects have been authorized or are expected to be authorized. There is a large demand for recreational shooting of prairie dogs each year; however, prairie dog numbers have declined in the area due to sylvatic plague outbreaks.

WILD AND SCENIC RIVERS

Management objectives: The management objective for the BLM-administered public lands that meet the wild and scenic rivers (WSR) suitability factors is to maintain or enhance their outstandingly remarkable values and wild and scenic rivers classifications until Congress considers them for possible designation (appendix G).

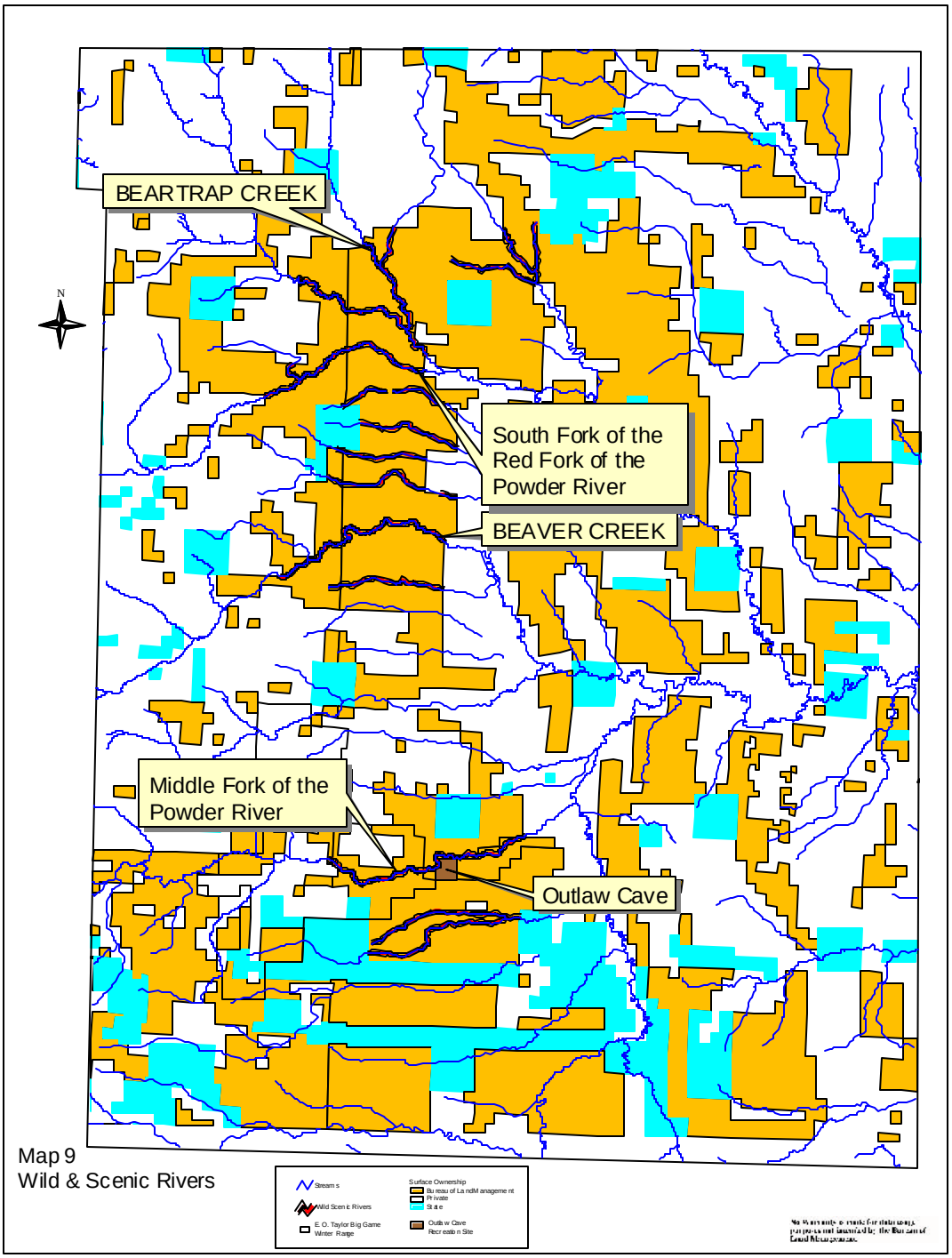
The BLM has determined that the BLM-administered public lands along the review segment of the Middle Fork of the Powder River (map 9) meet the WSR suitability factors and should be managed to maintain or enhance their outstandingly remarkable values for any possible future consideration for inclusion in the WSR system.

The suitable determination is based on the uniqueness of the diverse BLM land resources and their regional and national significance, making them worthy of any future consideration for addition to the WSR system.

The outstanding scenic, fisheries, wildlife, historic, recreational, and cultural values associated with the BLM-administered public lands within the review segment make this a uniquely diverse waterway segment in the region. Within the review segment, fish populations and habitat are of particularly high value. The review segment is one of only two waterway segments in the entire Big Horn Mountain Range classified as a Class 1 fishery with both regional and national importance. Outlaw Cave, also located on BLM-administered public lands within the waterway review segment, is a nationally famous and regionally important historical site.

Making up 85% of the lands along the review segment, the BLM-administered public lands are manageable by BLM under the provisions of the WSR Act. Other factors that complement and enhance this manageability include: 1) the existing public access to and along the review segment; 2) management consistency and compatibility with the 1.3 miles of the waterway (another 10% of the review segment) that is owned and administered by the Wyoming Game and Fish Department; 3) the existing State of Wyoming instream flow reservation for fisheries management through the review segment; and, 4) there are no anticipated conflicts with the management objectives on the intermingled private lands within the review segment (three short private land segments making up a total of about 0.6 miles, or 5%, of the review segment).

The concerns of the local landowners and general public for potential problems associated



Map 9
Wild & Scenic Rivers

with potential increased visitor pressure in the area can be controlled and managed. The general management direction provisions for dealing with these concerns and for maintaining or enhancing the qualifying WSR resource values on the BLM-administered public lands within the review segment will be developed in the course of developing the Buffalo planning and management decisions document.

In keeping with the strong local opposition to the WSR concept in the planning area in general, and in keeping with the Wyoming BLM WSR policy statement (June 1993), the BLM will not make or escalate any recommendations for WSR designation of the BLM-administered public lands within the Middle Fork of the Powder River review segment. Future Congressional consideration for WSR designation could still occur should Congress decide to do so at its volition, if public opinion should change to support such consideration, or if such a recommendation to Congress should be sponsored and supported by Wyoming state government or some other appropriate entity. In the interim, perhaps indefinitely, the BLM will continue its existing management as described in this document. Under this management, wild and scenic river characteristics were, and will be, maintained.

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GLOSSARY

Allotment: Refers to an area containing public land designated and managed for grazing of livestock.

Allotment management plan (AMP): A documented program which applies to livestock grazing on the public lands. It is prepared in consultation, cooperation and coordination with the lessee(s) or other involved affected party.

Alluvial valley floors (AVFs): An area of unconsolidated stream-laid deposits holding streams with water availability sufficient for subirrigation or flood irrigation agricultural activities.

Animal unit month: A standardized unit of measurement of the amount of forage necessary for the complete sustenance of one animal unit for one month; also, a unit of measurement of grazing privileges that represents the privilege of grazing one animal unit for a period of one month.

Appropriate management response: Specific actions taken in response to a naturally occurring wildland fire to implement protection and fire use objectives, while considering firefighter and public safety, anticipated management costs, resource values at risk, resource benefits, threats to private property, opportunities for reducing hazardous fuels, and political and social concerns. These might include confining or containing a wildland fire so it stays within a predetermined boundary, or aggressively and quickly suppressing the fire.

Archeological/historic site: A site that contains either objects of antiquity or cultural values relating to history and/or prehistory that warrant special attention.

-B-

Biological diversity: The variety of life and its processes; it includes the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur.

Buffalo Field Office Area: The administrative boundary of the resource area including Sheridan, Johnson, and Campbell counties regardless of landownership. The Buffalo BLM only administers the surface of public lands and mineral estates within these boundaries (excluding Forest Service lands).

-C-

Camping: Includes auto and trailer camping along with other camping at developed sites, and back country camping.

Candidate species: Species for which substantial biological information exists on file to support a proposal to list as endangered or threatened, but no proposal has yet been published in the *Federal Register*. The list of candidate species is revised approximately every two years in the Notice of Review.

Casual use: Activities that involve practices which do not ordinarily cause any appreciable disturbance or damage to the public lands, resources, or improvements and, therefore, do not require a right-of-way grant or temporary use permit.

Communication site: An area of public land granted to an applicant under authority contained in the Act of March 4, 1911 (36 CFR 1253; USC 961), and the regulations, to be used for a communication structure of facility.

Compliance: Adapting one's actions to another's wishes.

Cooperation: Individuals or groups working together to come to a mutual agreement.

Cultural resource management: Programs designed to protect, preserve, and/or scientifically study cultural resources and the natural resources that figure significantly in cultural systems. The objectives of such programs should be the conservation and protection of cultural values through management and the scientific study of these resources for the public good.

Cultural resources: Those fragile and nonrenewable physical remains of human activity, occupation, or endeavor reflected in districts, sites, structures, buildings, objects, artifacts, ruins, works of art, architecture, burial mounds, petroglyphs, and natural features that were of importance in past human events. These resources consist of a) physical remains; b) areas where significant human events occurred, even though evidence of the event no longer remains; and, c) the environment immediately surrounding the resource. Cultural resources are commonly discussed in terms of prehistoric and historic values; however, each period represents a part of the full continuum of cultural values from the earliest to the most recent.

-D-

Disposal, land: A transaction which leads to the transfer of the title to public lands from federal government.

-E-

Ecosystem: Ecosystems consist of groups of organisms occurring together and all environmental factors that influence them directly and indirectly.

Endangered species: Any animal or plant species in danger of extinction throughout all or a significant portion of its range. Also see **candidate species** and **threatened species**.)

Evaluation: Determining the worth of something by a rating method.

Exchange: A transaction whereby the federal government receives land or interests in land in exchange for other land or interests in land. A trading of public lands (surface and/or subsurface estates) that

usually do not have high public values for lands in other ownership which do have value for public use, management, and enjoyment. The exchange may be for the benefit of other federal agencies as well as the BLM.

-F-

Federal land: All classes of land owned by the federal government.

Federal Land Management and Policy Act of 1976 (FLPMA): It gives the BLM direction as a multiple use public land agency. Commonly called the "Organic Act" for the BLM.

Fire suppression: Fire control activities concerned with controlling and extinguishing a fire, starting at the time the fire is discovered.

Fishing: Includes fishing from the shore, and from a boat when the boat is secondary to the fishing activity.

Free-use permit: A permit to a government agency or nonprofit group to use mineral materials, such as sand and gravel, or other resources at no charge.

-G-

Game range: A wildlife refuge for certain game animals.

Grant: A gift of public lands, either in quantity or in place. Also, the document or the action which conveys land or an interest in land.

Grazing allotment: A parcel of grazing district lands which is assigned, pursuant to the federal range code for grazing districts, to an applicant for grazing privileges within grazing districts or to a group of such applicants.

-H-

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

-I-

Improvements: Includes any structures or developments of a permanent nature which tend to increase the value of land, such as buildings, fences, clearings, wells, or gates.

Interest: Ownership in a lease or prospective lease of all or a portion of the record title, working interest, operating rights, overriding royalty, payments our of production, carried interests, net profit

share, or similar instruments for participation in the benefit derived from a lease.

-L-

Landscape: A relatively large area of land with common climate, geology and soils containing predictably occurring terrain features such as slopes, drainage channels, rock outcrops, etc.

Lease: An authorization to possess and use public land for a period of time sufficient to amortize capital investments in the land.

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

Livestock: Cattle, sheep, horses, burros, and goats.

Locatable minerals: Whatever are recognized as minerals by the standard authorities, whether metallic or other substances, and are found in sufficient quantity and quality to justify their location under the Mining Law of 1872, as amended.

Location: A claim to public lands which is established either by the surrender of scrip or by the initiation of a mining or settlement claim.

-M-

mbf: Thousand board feet. A board foot is a unit of lumber measurement one foot long, one foot wide, and one inch thick, or its equivalent. It is the standard unit of measurement in the logging and timber industry by which standing timber is measured and sold and manufactured lumber is merchandised.

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

Mineral entry: A cash entry of public lands which are held as a mining claim or desired as a millsite.

Mineral materials: Minerals such as common varieties of sand, stone, gravel, pumice, and clay that are not obtainable under the mining or leasing law but that can be obtained under the Materials Act of 1947, as amended.

Mineral rights: Rights which attach only to mineral deposits.

Mining location: A mining claim.

mmbf: Million board feet (see **mbf**).

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

-N-

National Environmental Policy Act (NEPA): The basic national contract for protecting the environment. This act establishes policy, sets goals, and provides different ways to carry out the policy. It also requires the federal government to assess the environmental impacts of their actions.

National forest: A forest or weathershed reservation which is administered by the Forest Service, United States Department of Agriculture, for multiple uses including grazing, logging, and recreation.

National Register of Historic Places (NRHP): A federal government list of ". . . districts, sites, buildings, structures, and other objects significant in American history, architecture, archeology, and culture." The National Register is maintained by the National Park Service, U.S. Department of the Interior, and is published in its entirety in the *Federal Register* each year in February.

Notice: The communication of a pending action; the notification of parties of actions about to the taken. This is a part of due process.

-O-

Occupancy: Actual possession and use of land in something more than a slight or sporadic manner. As defined as a multiple use component, it is the management of public lands for occupancy involves the protection, regulated use, and development of lands as sites for economically and socially useful structures, either publicly or privately owned.

Off-road vehicle (ORV): Any vehicle capable of, or designed for, travel on or immediately over land, water, or other natural terrain, deriving motive power from any source other than muscle. The term **excludes** a) any nonamphibious registered motorboat; b) any fire, emergency, or law enforcement vehicle while being used for official or emergency purposes; and, c) any vehicle whose use is expressly authorized by a permit, lease, license, or contract issued by the authorized officer or otherwise approved.

Off-road vehicle (ORV) travel: Driving or riding in off-road areas (including trails). The type of vehicle and its capabilities are secondary to where and how the vehicle is used. The primary purpose of the riding or driving must be for recreation. Off-road travel includes off-road motorcycle and scooter

driving, snowmobiling, etc.; specialized craft such as all-terrain vehicles, swamp buggies, and four-wheel drives; and, conventional vehicles for off-road or trail purposes.

Operator: An individual, group, association, or corporation authorized to conduct, for example, livestock grazing, oil and gas drilling, or coal mining, on public lands.

Outdoor recreation: Includes, but is not limited to, hunting, fishing, trapping, photography, horseback riding, picnicking, hiking, camping, swimming, boating, rock and mineral collecting, sight-seeing, mountain climbing, and skiing. As defined as a multiple use component, it is the management of public lands for outdoor recreation; involves the protection, regulated use, and development of public lands having open space values in a manner that will make them available for appropriate recreation enjoyment by the public.

-P-

Paleontology: A science dealing with the life of past geological periods as known from fossil remains.

Patent: A government deed; a document or instrument that conveys legal title to public lands to the patentee.

Patented: Lands which have been conveyed to private ownership in fee simple, and over which the federal government exercises no control. In some patents, or "deeds," the mineral rights were retained and are administered by the BLM.

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

Planning area: Includes all of Campbell County and the parts of Sheridan and Johnson counties outside the Bighorn National Forest.

Powersite withdrawals: Lands which may have potential for water generated power through the construction of dams. The lands are withdrawn from the general land laws to protect that potential. The withdrawal can be lifted under certain conditions.

Project: Includes both the Study phase and the Plan phase.

Public lands: Any land and interest in land owned by the United States that are administered by the Secretary of the Interior through the BLM, without regard to how the United States acquired ownership, except for a) lands located on the Outer Continental Shelf and b) lands held for the benefit of Indians, Aleuts, and Eskimos. Includes public domain and acquired lands (see definitions). Vacant, unappropriated, and unreserved public lands, or public lands withdrawn by Executive Order 6910 of November 26, 1934, as amended, or by Executive Order 6964 of February 5, 1935, as amended, and not otherwise withdrawn or reserved, or public lands within grazing district established under Section 1 of the Act of June 28, 1934 (48 Stat. 1269), as amended, and not otherwise withdrawn or reserved.

Public land laws: The body of laws which regulates the administration of public lands and the resources thereon.

-R-

Recreation and Public Purpose Act (R&PP): Act of June 14, 1926 (44 Stat. 741), as amended, that provides for the purchase or lease of public lands by a) federal, state, or local governmental units for any activity that serves the interest of the general public consistent with public policy or b) nonprofit organizations if the lands are to be used for recreation purposes in an established or proposed recreation project area.

Recreation sites: Relatively small tracts of land which have value for concentrated and intensive recreation use that usually requires construction and maintenance of public facilities.

Regulation: An administrative statement describing the requirements which an applicant or claimant must meet under particular public laws and describing the procedures to be followed in the execution of such laws. Many acts passed by Congress are not sufficiently detained to spell out totally the minute requirements of the law. Regulations which are made known pursuant to law are considered by the courts to carry the same weight as the law they help interpret and spell out.

Rental: The amount paid periodically (usually annually) by the holder of a lease or right-of-way grant for the right to use land or resources for the purposes set out in the lease or grant.

Reservoir: A man-made, standing body of water whose water levels may be controlled.

Resource management plan (RMP): The Resource Management Plan provides the basic, general direction and guidance for BLM administered public lands in the planning area involved. This plan is a significant federal action therefore requires the preparation of an environmental impact statement. The EIS must analyze and document the environmental consequences and alternatives before a final decision is made on the resource management plan.

Revocation: Generally, an action which cancels a previous official act; specifically, an action that cancels a withdrawal. Revocation is usually done in conjunction with restoration, which opens the public lands. It need not necessarily "open" the lands to application/entry.

Right-of-way (ROW): A permit or easement which authorizes the use of public land for certain specified purposes, commonly for pipelines, roads, telephone lines, etc.; also, the lands covered by such an easement or permit. Does not grant an estate or any kind, only the right of use. May also include a site.

Riparian areas: The vegetation along the banks of rivers and streams and around springs, bogs, wet meadows, lakes, and ponds.

Riparian areas/habitat: Areas of land directly influenced by permanent water. Lakeshores and streambanks are typical riparian areas/habitat. Excluded are such sites as ephemeral streams or washes that do not exhibit the presence of vegetation dependent upon free water in the soil. Wetland and riparian areas are especially important because they are a critical source of biological diversity.

-S-

Salable minerals: Sand, gravel, stone, soil, and other common-variety mineral materials disposed of through sales at not less than their appraised price or through free-use permits.

Sawtimber: Logs of sufficient size and quality to be suitable for conversion into lumber or veneer.

Split estate: Mineral estate administered by the BLM which is under private, state of Wyoming lands, or lands administered by another federal agency. On split estate lands, the surface owner or managing agency controls the surface uses. However, BLM coordinates with them on mineral leasing and development. In a few cases, BLM administers the surface, but the minerals are owned by the state or a private entity.

State office: The first-level administrative unit of the BLM field organization. It comprises a geographic area consisting of one or more states.

Study area: Covers the planning area (all public lands and minerals in Campbell, Johnson, and Sheridan counties) but also considers the landtype units that are made up of natural landscape delineations which continues past the county lines.

-T-

Threatened species: Any animal or place species likely to become endangered within the foreseeable future throughout all or a part of its range. Officially listed pursuant to Section 4 of the Endangered Species Act of 1973 (P.L. 93-205).

Trespass: Any occupancy, use, or development of the public lands or their resources of the United States without authority.

-U-

Unnecessary and undue degradation: Surface disturbance greater than that which would normally result when the same or a similar activity is being accomplished by a prudent person in a usual, customary, and proficient manner that takes into consideration the effects of the activity on other resources and land uses outside the area of activity.

Use authorization: Approval of a proposed land use for land or resources on the prescribed form or document designated for such use; a document showing permission to use land or the resources

thereon; a formalized grant pursuant to a request to use land or resources.

-V-

Visual resources: The composite of land, water, vegetation, animals, structures, and other visible features.

-W-

Watershed protection: Maintenance of the stability of soil and soil cover and the control of the natural flow of water. As defines as a multiple use, management of public lands for watershed protection involves the protection, regulated use, and development of any public lands in a manner to control runoff; to minimize soil erosion, siltation, and other destructive consequences of uncontrolled waterflows; and, to maintain and improve storage, yield quality, and quantity of surface and subsurface waters.

Wetlands: Permanently wet or intermittently flooded areas where the water table (fresh, saline, or brackish) is at, near, or above the soil surface for extended intervals, where hydric wet soil conditions are normally exhibited, and where water depths generally do not exceed two meters. Marshes, shallows, swamps, muskegs, lake bogs, and wet meadows are examples of wetlands.

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

Wildlife refuge: A reservation for the protection of wildlife. Lands withdrawn specifically for the management and protection of wildlife and which are administered by the U.S. Fish and Wildlife Service.

Withdrawal: An action which restricts the disposition of public lands and that holds them for specific public purposes; also, public lands which have been dedicated to public purposes (for example, recreation sites, office or warehouse sites, etc.).

APPENDIX A

Wyoming BLM Mitigation Guidelines for Surface-disturbing and Disruptive Activities

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INTRODUCTION

These guidelines are primarily for the purpose of attaining statewide consistency in how requirements are determined for avoiding and mitigating environmental impacts and resource and land use conflicts. Consistency in this sense does not mean that identical requirements would be applied for all similar types of land use activities that may cause similar types of impacts. Nor does it mean that the requirements or guidelines for a single land use activity would be identical in all areas.

There are two ways the mitigation guidelines are used in the RMP EIS process: (1) as part of the planning criteria in developing the RMP alternatives, and (2) in the analytical processes of both developing the alternatives and analyzing the impacts of the alternatives. In the first case, an assumption is made that any one or more of the mitigations will be appropriately included as conditions of relevant actions being proposed or considered in each alternative. In the second case, the mitigations are used (1) to develop a baseline for measuring and comparing impacts among the alternatives; (2) to identify other actions and alternatives that should be considered, and (3) to help determine whether more stringent or less stringent mitigations should be considered.

The EIS for the RMP does not decide or dictate the exact wording or inclusion of these guidelines. Rather, the guidelines are used in the RMP EIS process as a tool to help develop the RMP alternatives and to provide a baseline for comparative impact analysis in arriving at RMP decisions. These guidelines will be used in the same manner in analyzing activity plans and other site-specific proposals. These guidelines and their wording are matters of policy. As such, specific wording is subject to change primarily through administrative review, not through the RMP EIS process. Any further changes that may be made in the continuing refinement of these guidelines and any development of program-specific standard stipulations will be handled in another forum, including appropriate public involvement and input.

PURPOSE

The purpose of the "Wyoming BLM Mitigation Guidelines" are (1) to reserve, for the BLM, the right to modify the operations of all surface and other human presence disturbance activities as part of the statutory requirements for environmental protection, and (2) to inform a potential lessee, permittee, or operator of the requirements that must be met when using BLM-administered public lands. These guidelines have been written in a format that will allow for (1) their direct use as stipulations, and (2) the addition of specific or specialized mitigation following the submission of a detailed plan of development or other project proposal, and an environmental analysis.

Those resource activities or programs currently without a standardized set of permit or operation stipulations can use the mitigation guidelines as stipulations or as conditions of approval, or as a baseline for developing specific stipulations for a given activity or program.

Because use of the mitigation guidelines was integrated into the RMP EIS process and will be integrated into the site-specific environmental analysis process, the application of stipulations or mitigation requirements derived through the guidelines will provide more consistency with planning decisions and plan implementation than has occurred in the past. Application of the mitigation guidelines to all surface and other human presence disturbance activities concerning BLM-administered public lands and resources will provide more uniformity in mitigation than has occurred in the past.

MITIGATION GUIDELINES

1. Surface Disturbance Mitigation Guideline

Surface disturbance will be prohibited in any of the following areas or conditions. Exception, waiver, or modification of this limitation may be approved in writing, including documented supporting analysis, by the authorized officer.

a. Slopes in excess of 25 percent.

b. Within important scenic areas (Class I and II Visual Resource Management Areas).

c. Within 500 feet of surface water and/or riparian areas.

d. Within either one-quarter mile or the visual horizon (whichever is closer) of historic trails.

e. Construction with frozen material or during periods when the soil material is saturated or when watershed damage is likely to occur.

Guidance

The intent of the SURFACE DISTURBANCE MITIGATION GUIDELINE is to inform interested parties (potential lessees, permittees, or operators) that when one or more of the five (1a through 1e) conditions exist, surface-disturbing activities will be prohibited unless or until a permittee or his designated representative and the surface management agency (SMA) arrive at an acceptable plan for mitigation of anticipated impacts. This negotiation will occur prior to development.

Specific criteria (e.g., 500 feet from water) have been established based upon the best information available. However, such items as geographical areas and seasons must be delineated at the field level.

Exception, waiver, or modification of requirements developed from this guideline must be based upon environmental analysis of proposals (e.g., activity plans, plans of development, plans of operation,

applications for permit to drill) and, if necessary, must allow for other mitigation to be applied on a site-specific basis.

2. Wildlife Mitigation Guideline

- To protect important big game winter habitat, activities or surface use will not be allowed from November 15 through April 30 within certain areas encompassed by the authorization. The same criteria apply to defined big game birthing areas from May 1 through June 30.

Application of this limitation to operation and maintenance of a developed project must be based on environmental analysis of the operational or production aspects.

Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the authorized officer.

- To protect important raptor and/or sage and sharp-tailed grouse nesting habitat, activities or surface use will not be allowed from February 1 through July 31 within certain areas encompassed by the authorization. The same criteria apply to defined raptor and game bird winter concentration areas from November 15 through April 30.

Application of this limitation to operation and maintenance of a developed project must be based on environmental analysis of the operational or production aspects.

Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the authorized officer.

- No activities or surface use will be allowed on that portion of the authorization area identified within (legal description) for the purpose of protecting (e.g., sage/sharp-tailed grouse breeding grounds, and/or other species/activities) habitat.

Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the authorized officer.

- Portions of the authorized use area legally described as (legal description), are known or suspected to be essential habitat for (name) which is a threatened or endangered species. Prior to conducting any onsite activities, the lessee/permittee will be required to conduct inventories or studies in accordance with BLM and U.S. Fish and Wildlife Service guidelines to verify the presence or absence of this species. In the event that (name) occurrence is identified, the lessee/permittee will be required to modify operational plans to include the protection requirements of this species and its

habitat (e.g., seasonal use restrictions, occupancy limitations, facility design modifications).

Guidance

The WILDLIFE MITIGATION GUIDELINE is intended to provide two basic types of protection: seasonal restriction (2a and 2b) and prohibition of activities or surface use (2c). Item 2d is specific to situations involving threatened or endangered species. Legal descriptions will ultimately be required and should be measurable and legally definable. There are no minimum subdivision requirements at this time. The area delineated can and should be defined as necessary, based upon current biological data, prior to the time of processing an application and issuing the use authorization. The legal description must eventually become a part of the condition for approval of the permit, plan of development, and/or other use authorization.

The seasonal restriction section identifies three example groups of species and delineates three similar time frame restrictions. The big game species bighorn sheep, all require protection of crucial winter range between November 15 and April 30. Elk and bighorn sheep also require protection from disturbance from May 1 through June 30, when they typically occupy distinct calving and lambing areas. Raptors include eagles, accipiters, falcons (peregrine, prairie, and merlin), buteos (ferruginous and Swainson's hawks), osprey, and burrowing owls. The raptors and sage and sharp-tailed grouse require nesting protection between February 1 and July 31. The same birds often require protection from disturbance from November 15 through April 30 while they occupy winter concentration areas.

Item 2c, the prohibition of activity or surface use, is intended for protection of specific wildlife habitat areas or values within the use area that cannot be protected by using seasonal restrictions. These areas or values must be factors that limit life-cycle activities (e.g., sage grouse strutting grounds, known threatened and endangered species habitat).

Exception, waiver, or modification of requirements developed from this guideline must be based upon environmental analysis of proposals (e.g., activity plans, plans of development, plans of operation, applications for permit to drill) and, if necessary, must allow for other mitigation to be applied on a site-specific basis.

3. Cultural Resource Mitigation Guideline

When a proposed discretionary land use has potential for affecting the characteristics which qualify a cultural property for the National Register of Historic Places (National Register), mitigation will be considered. In accordance with Section 106 of the Historic Preservation Act, procedures specified in 36 CFR 800 will be used in consultation with the Wyoming State Historic Preservation Officer and the Advisory Council on Historic Preservation in arriving at determinations regarding the need and type of mitigation to be required.

Guidance

The preferred strategy for treating potential adverse effects on cultural properties is "avoidance." If

avoidance involves project relocation, the new project area may also require cultural resource inventory. If avoidance is imprudent or unfeasible, appropriate mitigation may include excavation (data recovery), stabilization, monitoring, protection barriers and signs, or other physical and administrative measures.

Reports documenting results of cultural resource inventory, evaluation, and the establishment of mitigation alternatives (if necessary) shall be written according to standards contained in BLM Manuals, the cultural resource permit stipulations, and in other policy issued by the BLM. These reports must provide sufficient information for Section 106 consultation. Reports shall be reviewed for adequacy by the appropriate BLM cultural resource specialist. If cultural properties on, or eligible for, the National Register are located within these areas of potential impact and cannot be avoided, the authorized officer shall begin the Section 106 consultation process in accordance with the procedures contained in 36 CFR 800.

Mitigation measures shall be implemented according to the mitigation plan approved by the BLM authorized officer. Such plans are usually prepared by the land use applicant according to BLM specifications. Mitigation plans will be reviewed as part of Section 106 consultation for National Register eligible or listed properties. The extent and nature of recommended mitigation shall be commensurate with the significance of the cultural resource involved and the anticipated extent of damage. Reasonable costs for mitigation will be borne by the land use applicant. Mitigation must be cost effective and realistic. It must consider project requirements and limitations, input from concerned parties, and be BLM approved or BLM formulated.

Mitigation of paleontological and natural history sites will be treated on a case-by-case basis. Factors such as site significance, economics, safety, and project urgency must be taken into account when making a decision to mitigate. Authority to protect (through mitigation) such values is provided for in FLPMA, Section 102(a)(8). When avoidance is not possible, appropriate mitigation may include excavation (data recovery), stabilization, monitoring, protection barriers and signs, or other physical and administrative protection measures.

4. Special Resource Mitigation Guideline

To protect (resource value), activities or surface use will not be allowed (i.e., within a specific distance of the resource value or between date to date) in (legal description).

Application of this limitation to operation and maintenance of a developed project must be based on environmental analysis of the operational or production aspects.

Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the authorized officer.

Example Resource Categories (select or identify category and specific resource value):

a. Recreation areas.

b. Special natural history or paleontological features.

c. Special management areas.

d. Sections of major rivers.

e. Prior existing rights-of-way.

f. Occupied dwellings.

g. Other (specify).

Guidance

The SPECIAL RESOURCE MITIGATION GUIDELINE is intended for use only in site-specific situations where one of the first three general mitigation guidelines will not adequately address the concern. The resource value, location, and specific restrictions must be clearly identified. A detailed plan addressing specific mitigation and special restrictions will be required prior to disturbance or development and will become a condition for approval of the permit, plan of development, or other use authorization.

Exception, waiver, or modification of requirements developed from this guideline must be based upon environmental analysis of proposals (e.g., activity plans, plans of development, plans of operation, applications for permit to drill) and, if necessary, must allow for other mitigation to be applied on a site-specific basis.

5. No Surface Occupancy Guideline

No Surface Occupancy will be allowed on the following described lands (legal description) because of (resource value).

Example Resource Categories (select or identify category and specific resource value):

a. Recreation Areas (e.g., campgrounds, historic trails, national monuments).

b. Major reservoirs/dams.

c. Special management area (e.g., known threatened or endangered species habitat, areas suitable for consideration for wild and scenic rivers designation).

d. Other (specify).

Guidance

The NO SURFACE OCCUPANCY (NSO) MITIGATION GUIDELINE is intended for use only when other mitigation is determined insufficient to adequately protect the public interest and is the only alternative to "no development" or "no leasing." The legal description and resource value of concern must be identified and be tied to an NSO land use planning decision.

Waiver of, or exception(s) to, the NSO requirement will be subject to the same test used to initially justify its imposition. If, upon evaluation of a site-specific proposal, it is found that less restrictive mitigation would adequately protect the public interest or value of concern, then a waiver or exception to the NSO requirement is possible. The record must show that because conditions or uses have changed, less restrictive requirements will protect the public interest. An environmental analysis must be conducted and documented (e.g., environmental assessment, environmental impact statement, etc., as necessary) in order to provide the basis for a waiver or exception to an NSO planning decision. Modification of the NSO requirement will pertain only to refinement or correction of the location(s) to which it applied. If the waiver, exception, or modification is found to be consistent with the intent of the planning decision, it may be granted. If found inconsistent with the intent of the planning decision, a plan amendment would be required before the waiver, exception, or modification could be granted.

When considering the "no development" or "no leasing" option, a rigorous test must be met and fully documented in the record. This test must be based upon stringent standards described in the land use planning document. Since rejection of all development rights is more severe than the most restrictive mitigation requirement, the record must show that consideration was given to development subject to reasonable mitigation, including "no surface occupancy." The record must also show that other mitigation was determined to be insufficient to adequately protect the public interest. A "no development" or "no leasing" decision should not be made solely because it appears that conventional methods of development would be unfeasible, especially where an NSO restriction may be acceptable to a potential permittee. In such cases, the potential permittee should have the opportunity to decide whether or not to go ahead with the proposal (or accept the use authorization), recognizing that an NSO restriction is involved.

APPENDIX B

Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the State of Wyoming

INTRODUCTION

According to the Department of the Interior's final rule for grazing administration, effective August 21, 1995, the Wyoming Bureau of Land Management (BLM) State Director is responsible for the development of standards for healthy rangelands and guidelines for livestock grazing management on 18 million acres of Wyoming's public rangelands. The development and application of these standards and guidelines are to achieve the four fundamentals of rangeland health outlined in the grazing regulations (43 CFR 4180.1). Those four fundamentals are: (1) watersheds are functioning properly; (2) water, nutrients, and energy are cycling properly; (3) water quality meets State standards; and (4) habitat for special status species is protected.

Standards address the health, productivity, and sustainability of the BLM administered public rangelands and represent the minimum acceptable conditions for the public rangelands. The standards apply to all resource uses on public lands. Their application will be determined as use-specific guidelines are developed. Standards are synonymous with goals and are observed on a landscape scale. They describe healthy rangelands rather than important rangeland by-products. The achievement of a standard is determined by observing, measuring, and monitoring appropriate indicators. An indicator is a component of a system whose characteristics (e.g., presence, absence, quantity, and distribution) can be observed, measured, or monitored based on sound scientific principles.

Guidelines provide for, and guide the development and implementation of, reasonable, responsible, and cost-effective management practices at the grazing allotment and watershed level. The guidelines in this document apply specifically to livestock grazing management practices on the BLM administered public lands. These management practices will either maintain existing desirable conditions or move rangelands toward statewide standards within reasonable timeframes. Appropriate guidelines will ensure that the resultant management practices reflect the potential for the watershed, consider other uses and natural influences, and balance resource goals with social, cultural/historic, and economic opportunities to sustain viable local communities. Guidelines, like standards, apply statewide.

Implementation of the Wyoming standards and guidelines will generally be done in the following manner. Grazing allotments or groups of allotments in a watershed will be reviewed based on the BLM's current allotment categorization and prioritization process. Allotments with existing management plans and high-priority allotments will be reviewed

first. Lower priority allotments will be reviewed as time allows or when it becomes necessary for BLM to review the permit/lease for other reasons such as permit/lease transfers, permittee/lessee requests for change in use, etc. The permittees and interested publics will be notified when allotments are scheduled for review and encouraged to participate in the review. The review will first determine if an allotment meets each of the six standards. If it does, no further action will be necessary. If any of the standards aren't being met, then rationale explaining the contributing factors will be prepared. If livestock grazing practices are found to be among the contributing factors, corrective actions consistent with the guidelines will be developed and implemented before the next grazing season in accordance with 43 CFR 4180. If a lack of data prohibits the reviewers from determining if a standard is being met, then a strategy will be developed to acquire the data in a timely manner.

On a continuing basis, the Standards for Healthy Rangelands will direct on-the-ground management on the public lands. They will serve to focus the on-going development and implementation of activity plans toward the maintenance or the attainment of healthy rangelands.

Quantifiable resource objectives and specific management practices to maintain or achieve the standards will be developed at the local BLM District and Resource Area levels and will consider all reasonable and practical options available to achieve desired results on a watershed or grazing allotment scale. The objectives shall be reflected in site-specific activity or implementation plans as well as in livestock grazing permits/leases for the public lands. These objectives and practices may be developed formally or informally through mechanisms available and suited to local needs (such as Coordinated Resource Management [CRM] efforts).

The development and implementation of standards and guidelines will enable on-the-ground management of the public rangelands to maintain a clear and responsible focus on both the health of the land and its dependent natural and human communities. This development and implementation will ensure that any mechanisms currently being employed or that may be developed in the future will maintain a consistent focus on these essential concerns. This development and implementation will also enable immediate attention to be brought to bear on existing resource concerns.

These standards and guidelines are compatible with BLM’s three-tiered land use planning process. The first tier includes the laws, regulations, and policies governing BLM's administration and management of the public lands and their uses. The previously mentioned fundamentals of rangeland health specified in 43 CFR 4180.1, the requirement for BLM to develop these state (or regional) standards and guidelines, and the standards and guidelines themselves, are part of this first tier. Also part of this first tier are the specific requirements of various Federal laws and the objectives of 43 CFR 4100.2 that require BLM to consider the social and economic well-being of the local communities in its management process.

These standards and guidelines will provide for statewide consistency and guidance in the preparation, amendment, and maintenance of BLM land use plans, which represent the second tier of the planning process. The BLM land use plans provide general allocation decisions concerning the kinds of resource and land uses that can occur on the BLM administered public lands, where they can occur, and the types of conditional requirements under which they can occur. In general, the standards will be the basis for development of planning area-specific management objectives concerning rangeland health and productivity, and the guidelines will direct development of livestock grazing management actions to help accomplish those objectives.

The third tier of the BLM planning process, activity or implementation planning, is directed by the applicable land use plan and, therefore, by the standards and guidelines. The standards and guidelines, as BLM statewide policy, will also directly guide development of the site-specific objectives and the methods and practices used to implement the land use plan decisions. Activity or implementation plans contain objectives which describe the site-specific conditions desired. Grazing permits/leases for the public lands contain terms and conditions which describe specific actions required to attain or maintain the desired conditions. Through monitoring and evaluation, the BLM, grazing permittees, and other interested parties determine if progress is being made to achieve activity plan objectives.

Wyoming rangelands support a variety of uses which are of significant economic importance to the State and its communities. These uses include oil and gas production, mining, recreation and tourism, fishing, hunting, wildlife viewing, and livestock grazing. Rangelands also provide amenities which contribute to the quality of life in Wyoming such as open spaces, solitude, and opportunities for personal renewal. Wyoming's rangelands should be managed with consideration of the State's historical, cultural, and social development and in a manner which contributes to a diverse, balanced, competitive, and resilient economy in order to provide opportunity for economic development. Healthy rangelands can best sustain these uses.

To varying degrees, BLM management of the public lands and resources plays a role in the social and economic well-being of Wyoming communities. The National Environmental Policy Act (part of the above-mentioned first planning tier) and various other laws and regulations mandate the BLM to analyze the socioeconomic impacts of actions occurring on public rangelands. These analyses occur during the environmental analysis process of land use planning (second planning tier), where resource allocations are made, and during the environmental analysis process of activity or implementation planning (third planning tier). In many situations, factors that affect the social and economic well-being of local communities extend far beyond the scope of BLM management or individual public land users' responsibilities. In addition, since standards relate primarily to physical and biological features of the landscape, it is very difficult to provide measurable socioeconomic indicators that relate to the health of rangelands. It is important that standards be realistic and within the control of the land manager and users to achieve.

STANDARDS FOR HEALTHY PUBLIC RANGELANDS

STANDARD #1

Within the potential of the ecological site (soil type, landform, climate, and geology), soils are stable and allow for water infiltration to provide for optimal plant growth and minimal surface runoff.

THIS MEANS THAT:

The hydrologic cycle will be supported by providing for water capture, storage, and sustained release. Adequate energy flow and nutrient cycling through the system will be achieved as optimal plant growth occurs. Plant communities are highly varied within Wyoming.

INDICATORS MAY INCLUDE BUT ARE NOT LIMITED TO:

- Water infiltration rates
- Soil compaction
- Erosion (rills, gullies, pedestals, capping)
- Soil micro-organisms
- Vegetative cover (gully bottoms and slopes)
- Bare ground and litter

The above indicators are applied as appropriate to the potential of the ecological site.

STANDARD #2

Riparian and wetland vegetation has structural, age, and species diversity characteristic of the stage of channel succession and is resilient and capable of recovering from natural and human disturbance in order to provide forage and cover, capture sediment, dissipate energy, and provide for groundwater recharge.

THIS MEANS THAT:

Wyoming has highly varied riparian and wetland systems on public lands. These systems vary from large rivers to small streams and from springs to large wet meadows. These systems are in various stages of natural cycles and may also reflect other disturbance that is either localized or widespread throughout the watershed. Riparian vegetation captures sediments and associated materials, thus enhancing the nutrient cycle by capturing and utilizing nutrients that would otherwise move through a system unused.

INDICATORS MAY INCLUDE BUT ARE NOT LIMITED TO:

- Erosion and deposition rate
- Channel morphology and floodplain function

- Channel succession and erosion cycle
- Vegetative cover
- Plant composition and diversity (species, age class, structure, successional stages, desired plant community, etc.)
- Bank stability
- Woody debris and instream cover
- Bare ground and litter

The above indicators are applied as appropriate to the potential of the ecological site.

STANDARD #3

Upland vegetation on each ecological site consists of plant communities appropriate to the site which are resilient, diverse, and able to recover from natural and human disturbance.

THIS MEANS THAT:

In order to maintain desirable conditions and/or recover from disturbance within acceptable timeframes, plant communities must have the components present to support the nutrient cycle and adequate energy flow. Plants depend on nutrients in the soil and energy derived from sunlight. Nutrients stored in the soil are used over and over by plants, animals, and microorganisms. The amount of nutrients available and the speed with which they cycle among plants, animals, and the soil are fundamental components of rangeland health. The amount, timing, and distribution of energy captured through photosynthesis are fundamental to the function of rangeland ecosystems.

INDICATORS MAY INCLUDE BUT ARE NOT LIMITED TO:

- Vegetative cover
- Plant composition and diversity (species, age class, structure, successional stages, desired plant community, etc.)
- Bare ground and litter
- Erosion (rills, gullies, pedestals, capping)
- Water infiltration rates

The above indicators are applied as appropriate to the potential of the ecological site.

STANDARD #4

Rangelands are capable of sustaining viable populations and a diversity of native plant and animal species appropriate to the habitat. Habitats that support or could support threatened species, endangered species, species of special concern, or sensitive species will be maintained or enhanced.

THIS MEANS THAT:

The management of Wyoming rangelands will achieve or maintain adequate habitat conditions that support diverse plant and animal species. These may include listed threatened or endangered species (U.S. Fish and Wildlife-designated), species of special concern (BLM-designated), and other sensitive species (State of Wyoming-designated). The intent of this standard is to allow the listed species to recover and be delisted, and to avoid or prevent additional species becoming listed.

INDICATORS MAY INCLUDE BUT ARE NOT LIMITED TO:

- Noxious weeds
- Species diversity
- Age class distribution
- All indicators associated with the upland and riparian standards;
- Population trends
- Habitat fragmentation

The above indicators are applied as appropriate to the potential of the ecological site.

STANDARD #5

Water quality meets State standards.

THIS MEANS THAT:

The State of Wyoming is authorized to administer the Clean Water Act. BLM management actions or use authorizations will comply with all Federal and State water quality laws, rules and regulations to address water quality issues that originate on public lands. Provisions for the establishment of water quality standards are included in the Clean Water Act, as amended, and the Wyoming Environmental Quality Act, as amended. Regulations are found in Part 40 of the Code of Federal Regulations and in *Wyoming's Water Quality Rules and Regulations*. The latter regulations contain Quality Standards for Wyoming Surface Waters.

Natural processes and human actions influence the chemical, physical, and biological characteristics of water. Water quality varies from place to place with the seasons, the climate, and the kind substrate through which water moves. Therefore, the assessment of water quality takes these factors into account.

INDICATORS MAY INCLUDE BUT ARE NOT LIMITED TO:

- Chemical characteristics (e.g., pH, conductivity, dissolved oxygen)
- Physical characteristics (e.g., sediment, temperature, color)
- Biological characteristics (e.g., macro- and micro-invertebrates, fecal coliform, and

plant and animal species)

STANDARD #6

Air quality meets State standards.

THIS MEANS THAT:

The State of Wyoming is authorized to administer the Clean Air Act. BLM management actions or use authorizations will comply with all Federal and State air quality laws, rules, regulations and standards. Provisions for the establishment of air quality standards are included in the Clean Air Act, as amended, and the Wyoming Environmental Quality Act, as amended. Regulations are found in Part 40 of the Code of Federal Regulations and in *Wyoming Air Quality Standards and Regulations.*

INDICATORS MAY INCLUDE BUT ARE NOT LIMITED TO:

- Particulate matter
- Sulfur dioxide
- Photochemical oxidants (ozone)
- Volatile organic compounds (hydrocarbons)
- Nitrogen oxides
- Carbon monoxide
- Odors
- Visibility

BLM WYOMING GUIDELINES FOR LIVESTOCK GRAZING MANAGEMENT

1. Timing, duration, and levels of authorized grazing will ensure that adequate amounts of vegetative ground cover, including standing plant material and litter, remain after authorized use to support infiltration, maintain soil moisture storage, stabilize soils, allow the release of sufficient water to maintain system function, and to maintain subsurface soil conditions that support permeability rates and other processes appropriate to the site.

2. Grazing management practices will restore, maintain, or improve riparian plant communities. Grazing management strategies consider hydrology, physical attributes, and potential for the watershed and the ecological site. Grazing management will maintain adequate residual plant cover to provide for plant recovery, residual forage, sediment capture, energy dissipation, and groundwater recharge.

3. Range improvement practices (instream structures, fences, water troughs, etc.) in and adjacent to riparian areas will ensure that stream channel morphology (e.g., gradient, width/depth ratio, channel roughness and sinuosity) and functions appropriate to climate and landform are maintained or enhanced. The development of springs, seeps, or other projects affecting water and associated resources shall be designed to protect the ecological and hydrological functions, wildlife habitat, and significant cultural, historical, and archaeological values associated with the water source. Range improvements will be located away from riparian areas if they conflict with achieving or maintaining riparian function.

4. Grazing practices that consider the biotic communities as more than just a forage base will be designed in order to ensure that the appropriate kinds and amounts of soil organisms, plants, and animals to support the hydrologic cycle, nutrient cycle, and energy flow are maintained or enhanced.

5. Continuous season-long or other grazing management practices that hinder the completion of plants' life-sustaining reproductive and/or nutrient cycling processes will be modified to ensure adequate periods of rest at the appropriate times. The rest periods will provide for seedling establishment or other necessary processes at levels sufficient to move the ecological site condition toward the resource objective and subsequent achievement of the standard.

6. Grazing management practices and range improvements will adequately protect vegetative cover and physical conditions and maintain, restore, or enhance water quality to meet resource objectives. The effects of new range improvements (water developments, fences, etc.) on the health and function of rangelands will be carefully considered prior to their implementation.

7. Grazing management practices will incorporate the kinds and amounts of use that will

restore, maintain, or enhance habitats to assist in the recovery of Federal threatened and endangered species or the conservation of federally-listed species of concern and other State-designated special status species. Grazing management practices will maintain existing habitat or facilitate vegetation change toward desired habitats. Grazing management will consider threatened and endangered species and their habitats.

8. Grazing management practices and range improvements will be designed to maintain or promote the physical and biological conditions necessary to sustain native animal populations and plant communities. This will involve emphasizing native plant species in the support of ecological function and incorporating the use of non-native species only in those situations in which native plant species are not available in sufficient quantities or are incapable of maintaining or achieving properly functioning conditions and biological health.

9. Grazing management practices on uplands will maintain desired plant communities or facilitate change toward desired plant communities.

DEFINITIONS

ACTIVITY PLANS
Allotment Management Plans (AMPs), Habitat Management Plans (HMPs), Watershed Management Plans (WMPs), Wild Horse Management Plans (WHMPs), and other plans developed at the local level to address specific concerns and accomplish specific objectives.

COORDINATED RESOURCE MANAGEMENT (CRM)
A group of people working together to develop common resource goals and resolve natural resource concerns. CRM is a people process that strives for win-win situations through consensus-based decisionmaking.

DESIRED PLANT COMMUNITY
A plant community which produces the kind, proportion, and amount of vegetation necessary for meeting or exceeding the land use plan/activity plan objectives established for an ecological site(s). The desired plant community must be consistent with the site's capability to produce the desired vegetation through management, land treatment, or a combination of the two.

ECOLOGICAL SITE
An area of land with specific physical characteristics that differs from other areas both in its ability to produce distinctive kinds and amounts of vegetation and in its response to management.

EROSION
(v.) Detachment and movement of soil or rock fragments by water, wind, ice, or gravity. (n.) The land surface worn away by running water, wind, ice, or other geological agents, including such processes as gravitational creep.

GRAZING MANAGEMENT PRACTICES
Grazing management practices include such things as grazing systems (rest-rotation, deferred rotation, etc.), timing and duration of grazing, herding, salting, etc. They do not include physical range improvements.

GUIDELINES (For Grazing Management)
Guidelines provide for, and guide the development and implementation of, reasonable, responsible, and cost-effective management actions at the allotment and watershed level which move rangelands toward statewide standards or maintain existing desirable conditions. Appropriate guidelines will ensure that the resultant management actions reflect the potential for the watershed, consider other uses and natural influences, and balance resource goals with social, cultural/historic, and economic opportunities to sustain viable local communities. Guidelines, and therefore, the management actions they

engender, are based on sound science, past and present management experience, and public input.

INDICATOR
An indicator is a component of a system whose characteristics (e.g., presence, absence, quantity, and distribution) can be observed, measured, or monitored based on sound scientific principles. An indicator can be evaluated at a site- or species-specific level. Monitoring of an indicator must be able to show change within timeframes acceptable to management and be capable of showing how the health of the ecosystem is changing in response to specific management actions. Selection of the appropriate indicators to be observed, measured, or monitored in a particular allotment is a critical aspect of early communication among the interests involved on-the-ground. The most useful indicators are those for which change or trend can be easily quantified and for which agreement as to the significance of the indicator is broad based.

LITTER
The uppermost layer of organic debris on the soil surface, essentially the freshly fallen or slightly decomposed vegetal material.

MANAGEMENT ACTIONS
Management actions are the specific actions prescribed by the BLM to achieve resource objectives, land use allocations, or other program or multiple use goals. Management actions include both grazing management practices and range improvements.

OBJECTIVE
An objective is a site-specific statement of a desired rangeland condition. It may contain either or both qualitative elements and quantitative elements. Objectives frequently speak to change. They are the focus of monitoring and evaluation activities at the local level. Monitoring of the indicators would show negative changes or positive changes. Objectives should focus on indicators of greatest interest for the area in question.

RANGE IMPROVEMENTS
Range improvements include such things as corrals, fences, water developments (reservoirs, spring developments, pipelines, wells, etc.) and land treatments (prescribed fire, herbicide treatments, mechanical treatments, etc.).

RANGELAND
Land on which the native vegetation (climax or natural potential) is predominantly grasses, grass-like plants, forbs, or shrubs. This includes lands revegetated naturally or artificially when routine management of that vegetation is accomplished mainly through manipulation of grazing. Rangelands include natural grasslands, savannas, shrublands, most deserts, tundra, alpine communities, coastal marshes, and wet meadows.

RANGELAND HEALTH
The degree to which the integrity of the soil and ecological processes of rangeland

ecosystems are sustained.

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

STANDARDS
Standards are synonymous with goals and are observed on a landscape scale. Standards apply to rangeland health and not to the important by-products of healthy rangelands. Standards relate to the current capability or realistic potential of a specific site to produce these by-products, not to the presence or absence of the products themselves. It is the sustainability of the processes, or rangeland health, that produces these by-products.

TERMS AND CONDITIONS
Terms and conditions are very specific land use requirements that are made a part of the land use authorization in order to assure maintenance or attainment of the standard. Terms and conditions may incorporate or reference the appropriate portions of activity plans (e.g., Allotment Management Plans). In other words, where an activity plan exists that contains objectives focused on meeting the standards, compliance with the plan may be the only term and condition necessary in that allotment.

UPLAND
Those portions of the landscape which do not receive additional moisture for plant growth from run-off, streamflow, etc. Typically these are hills, ridgetops, valley slopes, and rolling plains.

APPENDIX C

Reasonably Foreseeable Development Scenario for Oil and Gas Development in the Buffalo Field Office Area, Wyoming (as put on the Wyoming BLM web page (www.wy.blm.gov/nepa/nfdocs.html) in June 2000)

(As of December 2000 these projections are being revised and will be evaluated as part of the Powder River Oil and Gas EIS which is scheduled for completion in spring 2002.)

SUMMARY

Estimating how much oil and gas activity will occur on federal acreage in the Buffalo Field Office area (BFOA) during the next ten years is difficult. It is expected that, with a few exceptions, all public domain and acquired minerals will be available for leasing as indicated by the current land use plan. Separate estimates are given for leasing, seismic, drilling, and production activities during the next five to ten years. Coalbed methane (CBM) is considered separately from conventional oil and gas.

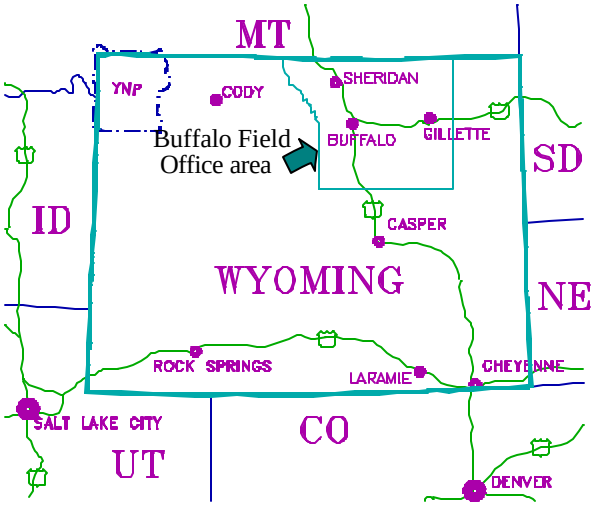
The BFOA is in northeast Wyoming (map 1). Most of the BFOA is in the Powder River Basin (PRB). Fifteen oil and gas plays have been identified in the BFOA and summarized by the U.S. Geological Survey (Dolton 1990). The coalbed methane (CBM) play covers the central part of the BFOA and is currently one of the most active gas plays in the country. An oil and/or gas play is an area, geologic formation, or geologic trend which has good potential for oil and/or gas development or is generating a large amount of interest in leasing and drilling.

Federal oil and gas leasing from 2000 to 2010 is estimated to average between 100,000 and 500,000 acres per year. Average bids are estimated between $10 to $50 per acre. In the BFOA, from February 1990 to August 1999, $83 million have been received by the BLM for federal oil and gas lease bonuses. The estimated amount that can be directly attributed to CBM is $51 million.

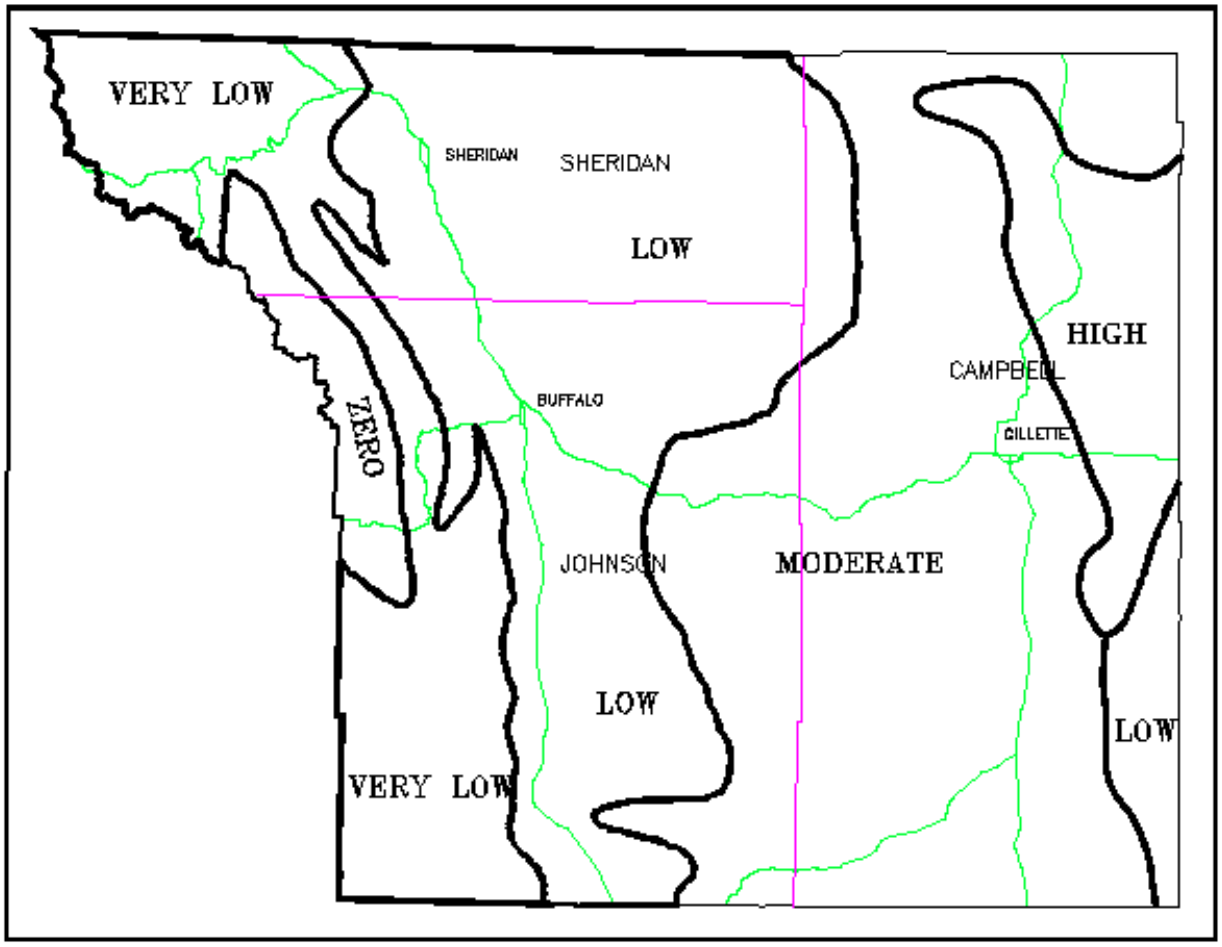
Seismic activity on BLM-administered public surface will probably average fewer than 10 surveys per year from 2000 to 2010. Most will be three-dimensional (3D) surveys rather than 2D, and most will continue to occur in Campbell County.

From 2000 to 2010 federal nonCBM wells are expected to average between 25 and 110 per year but could be as high as 150 per year. The location of anticipated drilling activity is shown on map 2. During the next ten years new nonCBM field discoveries will probably average between five and ten per year with average field size being two to five wells.

Oil production in 1998 was 17 million barrels per year in the BFOA. Although oil production may show minor year-to-year increases, overall it is anticipated to decline an estimated 5% per year during the next ten years, unless a major oil play develops, or prices increase substantially. Oil production from federal leases will continue to be about 50% of total oil production.



Map 1: Buffalo Field Office Area Location



Map 2: Oil and gas development potential map for nonCBM wells in the BFOA.

Development potentials are based on estimated average drilling density and are defined as:

***HIGH*--**over 1 wells/township/year;

***MODERATE*--**0.1 to 1.0 wells/township/year;

***LOW*--**less than 0.1 well/township/year;

***VERY LOW*--**less than 0.02 well/township/year;

***ZERO*--**no drilling.

Gas production in the BFOA, including CBM, has increased from 1.7 billion cubic feet of gas (bcfg) per month in January 1995 to 5.1 bcfg/month in April 1999. This increase is from expanding CBM production and is expected to continue during the next two to five years. Gas production will probably be more or less steady for a few years before starting to decline. Excluding CBM, gas production has declined from 3.4 bcfg/month in January 1986 to 1.3 bcfg/month in January 1999. Although there may be a few year-to-year increases, this decline in nonCBM gas is expected to continue from 2000 to 2010.

Currently there are about 1,282 productive federal nonCBM oil and gas wells in the BFOA. Although the number of producing oil wells may increase slightly year-to-year it will almost certainly decline over the next 10 years. During the next 10 years the number of federal nonCBM wells abandoned will exceed the number of federal nonCBM wells drilled.

Coalbed Methane Summary

CBM gas production increased from 0.28 bcfg/month in January 1995 to 4.57 bcfg/month in June 1999, an average annual increase of 62%. During June 1999, 14 million barrels of water (1,800 acre-feet) were produced. Since February 1996 approximately $51 million have been received in federal lease bonuses because of CBM development.

Based on data from published CBM resource estimates (which will probably be revised upward), as many as 70,000 productive CBM wells may ultimately be drilled with as many as 35,000 being drilled by 2010.

CBM drilling and production estimates require accurate estimates of the resource. CBM resource estimates are based on coal gas content measurements, in standard cubic feet per ton of coal and coal thicknesses and tonnages per given area. In the past, there were no accurate figures available for any of these quantities. Only limited coal gas content measurements were available, which were all obtained using procedures that have been shown to be inadequate. The only coal thicknesses and tonnages available were outdated and based on limited data. As a result, CBM resource estimates made by both BLM and the mineral industry have been markedly inaccurate. Planning and National Environmental Policy Act (NEPA) analyses prepared on the basis of these estimates have failed, by a wide margin, to anticipate the pace and extent of CBM development. The deficiencies in data and resource estimates are discussed in greater detail later in this appendix.

Federal and private efforts to obtain more accurate, publicly available data are underway. The 1999 Coal Resource Assessment prepared by the U. S. Geological Survey (USGS 1999) provides comprehensive and updated mapping and stratigraphy of the Fort Union Formation and individual coal seams, and contains detailed coal resource estimates based on updated current data. In early 1999, BLM and USGS began a cooperative project to collect gas content measurements and other CBM data, using current industry standard procedures, from coal cores donated by participating CBM operators. These data will support more accurate gas-in-place estimates, allowing future planning and environmental analyses to more accurately predict CBM drilling and production.

INTRODUCTION

Impacts caused by oil and gas development, and impacts to oil and gas development cannot be assessed without estimating future oil and gas activity. Oil and gas development activity is subdivided into leasing, seismic, drilling, and production, with a separate estimate for each.

This scenario presents an estimate of future activity within the BFOA, under the existing BLM resource management plan (the current land use plan), unless otherwise noted. It is assumed that all public domain and acquired minerals in the BFOA will be available for leasing and development without excessive restrictions except for the following areas:

1. Wilderness and wilderness study areas (WSAs) (only the Fortification Creek WSA, 12,419 acres mostly in T. 52 N., R. 72 W., has high oil and gas occurrence potential);

2. Selected areas within federally approved coal mine plans; and,

3. Wyoming Game and Fish Department's (WGFD) big game winter ranges adjacent to the Bighorn National Forest.

Present and future oil and gas development in the BFOA is primarily based on three factors:

1. Crude oil and natural gas prices (figures 1 and 2) and anticipated price changes;

2. Development of new plays, such as horizontal drilling in the Niobrara Formation or CBM development, or renewed interest in old plays; and,

3. Advances in and application of technology such as secondary and enhanced oil recovery, and 3-D seismic surveys.

These factors are cannot be predicted with certainty, but some generalizations are possible. The estimates presented here are based on past trends and anticipated future price increases.

Oil and Gas Prices

The average annual change in oil prices for the lower 48 states was estimated to range between -1.3% and +1.5% from 1996 to 2020 by the Energy Information Administration (1998); their best guess is 0.4% per year increase from 1996 levels (figure 2). Average US petroleum consumption is estimated to increase 18% to 46% from 1996 to 2020. Petroleum consumption as a percent of US energy consumption is expected to increase from 38% today, to 40% by 2020 (Energy Information Agency, 1998).

The average annual change in gas prices is projected to be between -0.7% and 1.2% from

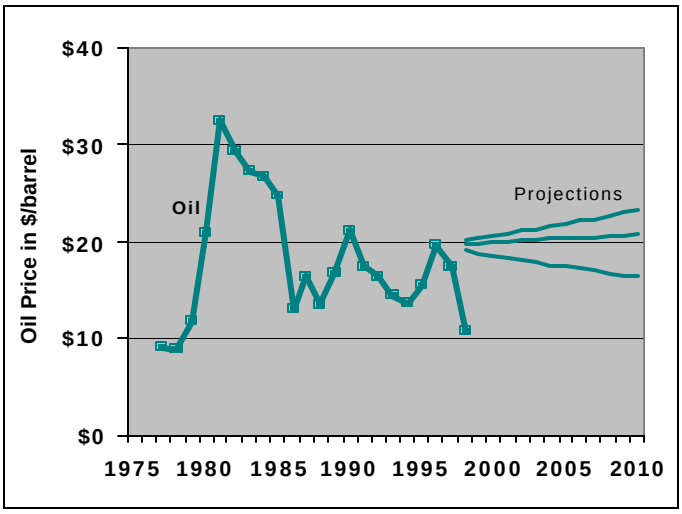


Figure 1: Historic Oil Prices and Projections. Oil prices are from *Wyoming GeoNotes.* Projections are from Energy Information Administration.

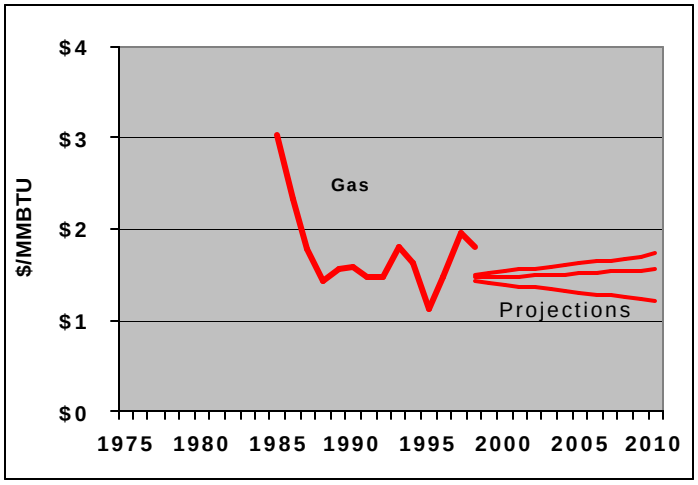


Figure 2: Historic Gas Prices and Projections. Gas prices are from *Wyoming GeoNotes.* Projections are from Energy Information Administration.

1996 to 2020, with the best guess case being 0.5%. Figure 2 shows this projection.

Oil and Gas Plays

There were 15 oil and gas plays identified in the BFOA and described by Dolton, et al. (1990). An oil and gas play is an area where a geologic formation contains oil and/or gas deposits. These plays are summarized in table 1. Nearly all the oil produced from fields within the BFOA is from these plays. The percentages in table 1 were measured from the maps in Dolton et al (1990). The amount of undiscovered oil and gas remaining in the BFOA cannot be estimated from the information in table 1. For example, because of geologic hererogenity, uneven distribution of resources, and reservoir size variations, it cannot be assumed that if 20% of a play area is within the BFOA or that approximately 20% of the estimated undiscovered reserves are also within the BFOA. Two plays not mentioned by Dolton et al (1990) are the coalbed methane gas play and the Niobrara Formation fractured shale play.

Coalbed Methane

During deposition and compaction of the organic material which ultimately becomes coal, large quantities of methane gas are generated. Methane gas produced from coal has a lower energy (Btu) content than other natural gas produced in the BFOA. Methane molecules are trapped by adsorption in the coal micro pores and porosity.

The BFOA contains some of the largest coal deposits in the country. The most extensive coal beds are in the Paleocene age Tongue River member of the Fort Union Formation in Wyoming.

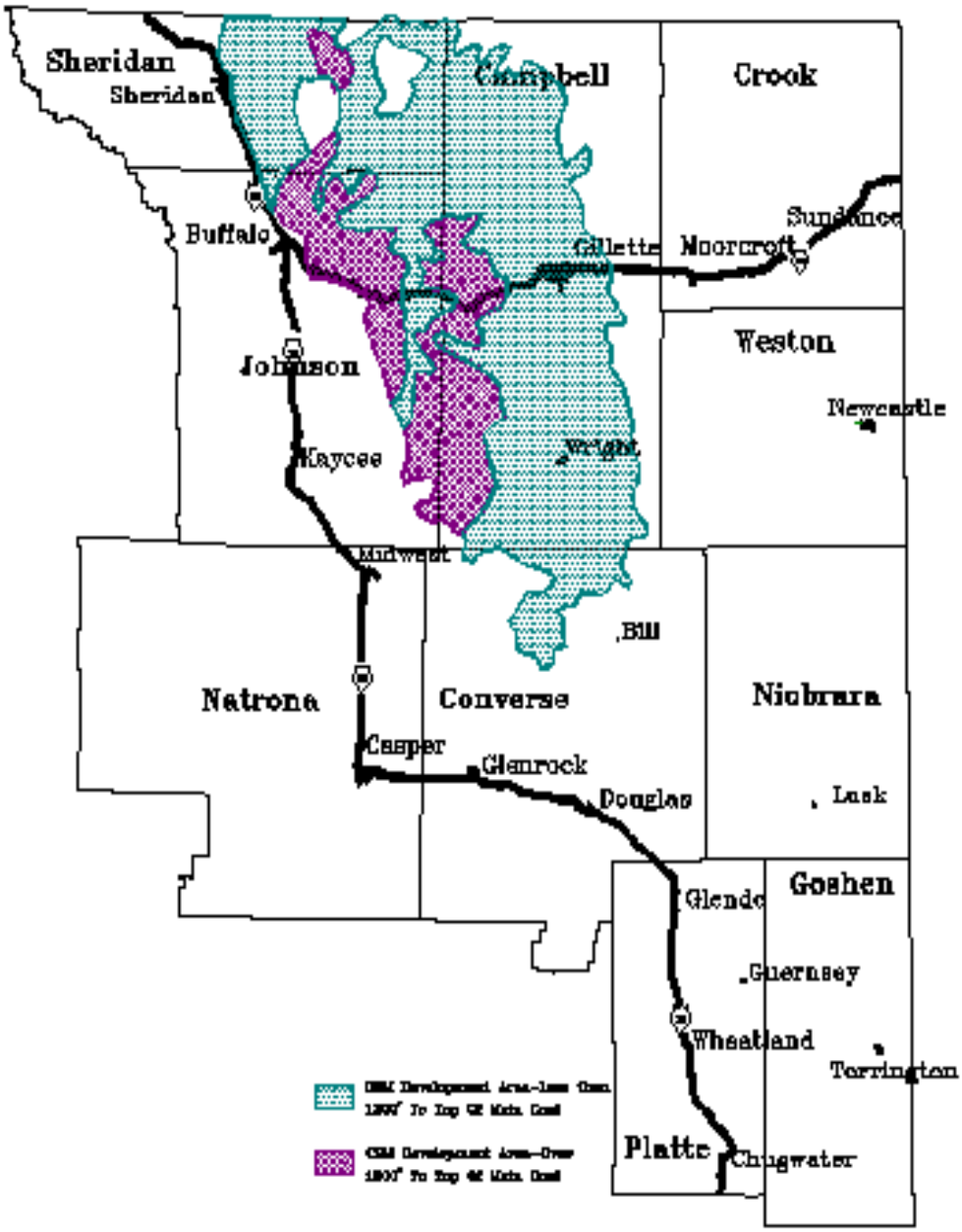
The approximate area of potential CBM development can be defined based on depth to coal and coal thickness (map 3). The CBM play in the BFOA was one of the most active gas plays in the country in 1998 and 1999. Initially wells were less than 500 feet deep and concentrated just west of coal mines on the east side of the play area. Over time well depths have increased; many wells currently being drilled are more than 1,000 feet deep. To develop the deepest coals in the Tongue River member, wells may need to be drilled as deep as 3,000 feet.

In October 1999 there were over 1,230 producing and 900 shut-in CBM wells. CBM production for October 1999 was 5.8 bcfg. CBM production in the BFOA has increased an average 62% per year during the past five years (figure 3). Production was limited by pipeline capacity until late 1999 when two trunk lines into the PRB were completed. These new pipelines increased capacity several-fold. Based on Wyoming Oil and Gas Conservation Commission (WOGCC) data cumulative coalbed methane production through October 1999 was 110 bcfg.

Coalbed methane resource estimates by the Potential Gas Committee (PGC; 1998) ranged from 4,664 to 15,859 bcfg (best guess is 9,329 bcfg) for CBM resources in the

Table 1 Summary of all the oil and gas plays evaluated by Dolton et. al (1990). The reader is cautioned from estimating undiscovered reserves in the BFOA based on this table.

Oil and Gas Play	Total Play Area	Play Area in BFOA	Play Area in BFOA (%)	BFOA in Play Area (%)	No. of Fields	Estimated Reserves		Remarks
						MMBO	BCFG	
Basin Margin Anticline	8.12	1.37	16.9	18.6	5	24	21	Exploration nearing conclusion; future discoveries probably in small subtle traps.
Basin Margin Subthrust	2.12	0.54	25.5	7.3	NA	NA	NA	Geologic data limited; accurate prediction of future reserves or field sizes not possible.
Dakota	18.63	0.77	4.1	10.5	21	158	158	
Deep Frontier	5.47	0.85	15.6	11.6	6	37	100	
Lakota	21.21	4.06	19.2	55.2	NA	NA	NA	Undiscovered fields are probably small.
Leo	8.05	0.30	3.7	4.0	60	110	30	
Mesaverde & Lewis (stratigraphic)	7.99	3.41	42.7	46.3	10	66	91	
Minnelusa (total)	17.01	3.22	18.9	43.7	165	822	203	In explored area, most discoveries will be fields with 3MMBO or less. In unexplored area, field size will be similar to explored area.
Minnelusa (explored area)	NA	NA	NA	NA	26	48	10	
Minnelusa (unexplored area)	NA	NA	NA	NA	139	775	194	
Minnelusa (less prospective)	4.93	0.00	0.0	0.0	NA	NA	NA	
Mowry Shale	11.63	3.96	34.1	53.9	NA	NA	NA	Lightly explored; possible large nonconventional resource.
Muddy (total)	21.25	4.04	19.0	55.0	39	441	1298	
Muddy (explored area, shallow)	NA	NA	NA	NA	10	60	82	
Muddy (unexplored area, deep)	NA	NA	NA	NA	30	381	1216	
Shannon marine shelf	8.40	4.07	48.4%	55.3	20	128	103	Sx & Sh combined
Sussex marine shelf	10.77	3.46	32.1%	47.0	(combined w/Shannon)			



Map 3: Approximate CBM Development Area. The boundary is based on depth to top of coal, thickness of thickest coal, CBM well locations, and federal oil and gas lease sale results.

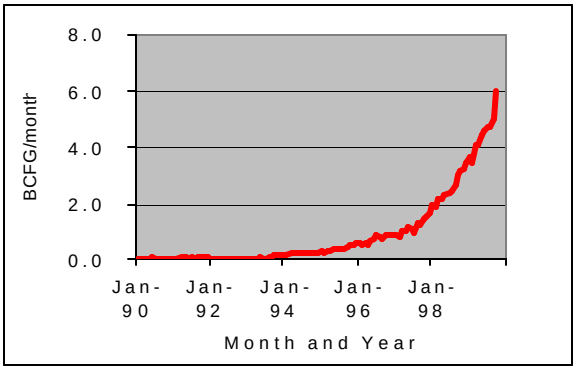


Figure 3: Coalbed Methane Production in the BFOA.

Powder River Basin. These estimates are based on reasonable gas price scenarios. The USGS also estimated the coalbed methane resources in the PRB. The estimate is several years old and was made before the play began rapid and extensive expansion. The USGS estimates appear to be too low and were not used in this analysis.
Figure 4 displays the drilling history in the BFOA from 1990 to1998. There was a general decline in the number of wells drilled through 1994 then an abrupt increase due to CBM drilling. As shown in figure 4, most drilling activity was in the Minnelusa play until 1994.

Niobrara Formation

Economic development of the Niobrara Formation fractured shale play will almost certainly depend on successful application of horizontal well technology. This play is currently in its infancy and is somewhat hypothetical. Undiscovered reserves cannot be predicted with reasonable certainty, except that the potential recovery may be as large as several million barrels of oil and associated natural gas. Although horizontal wells were used to develop oil and gas reserves in fractured shale reservoirs in southeast Wyoming, overall results have been disappointing in the PRB. Unless there are a few economic wells drilled, it is unlikely that this play will have significant development in the foreseeable future.

Oil and Gas Occurrence Potential

Projection of future oil and gas activity must first consider where oil and gas resources might occur. To do this an oil and gas occurrence potential map was constructed (map 4). The oil and gas occurrence potential was classified as high, moderate, low, or none. These classifications are based on geology, data from oil and gas test wells, and the play areas described by Dolton, et al. (1990). The *Geologic Map of Wyoming* (Love and Christiansen 1984) and the *Structure Contour Map of the Powder River Basin and* Casper Arch, Wyoming and Montana (Petroleum Information 1987) were also used extensively. Map 4 was drawn to show the occurrence potential of oil and gas and does not indicate whether these resources can be developed economically. Definitions of the occurrence potential classifications are given on map 4. Note that most of the BFOA has high occurrence potential.

LEASING

After initial field work, research, and subsurface mapping (which sometimes includes use of seismic data), leasing is often the next step in oil and gas development, Leasing may be based on speculation, with the most risky leases usually purchased for the lowest prices.

By statute, leases on lands where the US owns the oil and gas rights are offered via oral auction at least quarterly. Lands offered for lease are listed by legal subdivision (usually quarter-quarter section) and combined into parcels. The maximum lease size is 2,560 federal acres. The minimum bid for a federal oil and gas lease is $2.00 per acre. An administrative fee of $75.00 per parcel is also required. Each successful bidder must meet citizenship and legal requirements. Leases have ten-year terms and a 12.5% royalty

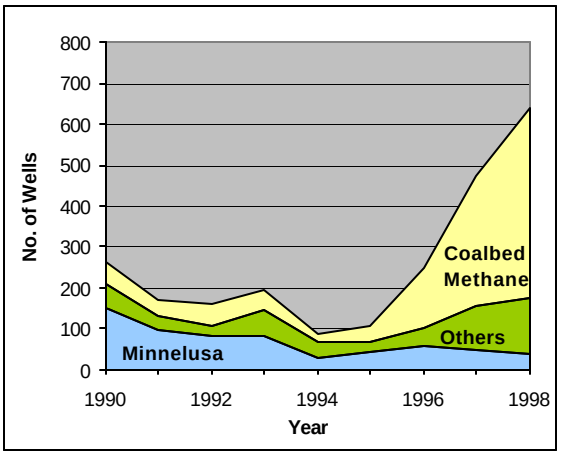
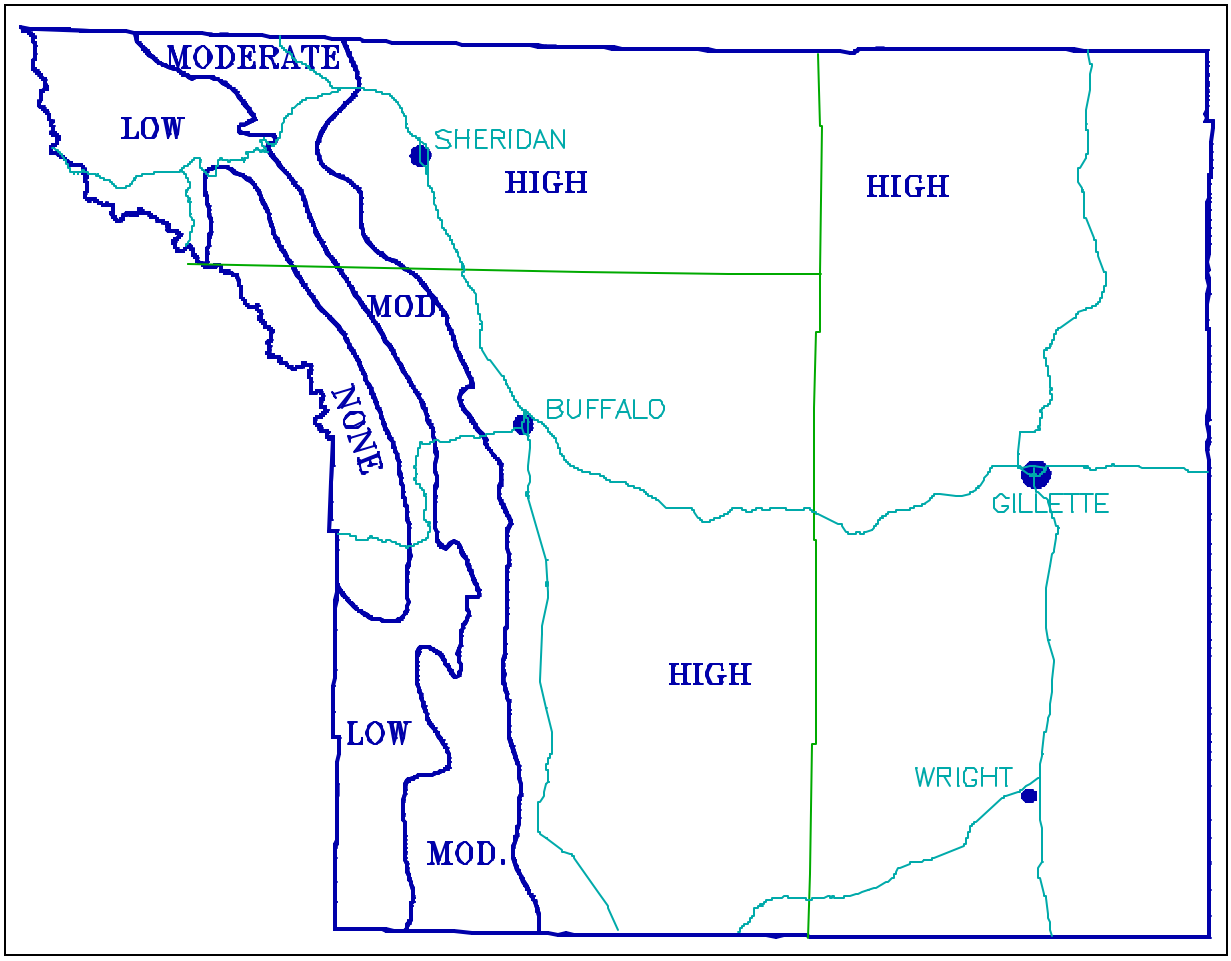


Figure 4: Wells Drilled in the BFOA From 1990 to 1998. Most wells listed as “others” were drilled to the Shannon or Sussex sandstones. Data are from PI/Dwights.



Map 4: Oil and Gas Occurrence Potential Map. Definitions of occurrence potentials follow.

HIGH--There is a demonstrated existence of petroleum source, reservoir quality strata, and traps. Areas of high potential have discovered oil occurrences or free oil recovery from well tests.

MODERATE--There is direct or indirect geological evidence that petroleum source, reservoir quality strata, and trapping mechanisms are present. Discovered occurrences are not present but there may be shows of oil in core or drill stem tests.

LOW--There is geological evidence that a petroleum source, reservoir quality strata, or trapping mechanisms are not present.

NONE--There is a demonstrated absence of a petroleum source, reservoir quality strata, or trapping mechanisms. Demonstrated absence means physical evidence documented in geological literature.

rate. Leases sold competitively before December 1992 had five-year terms. Leases which become productive are held by production and do not terminate until all wells on the lease have ceased production. Many private oil and gas leases contain a Pugh clause, which allows only the developed portion of the lease to be held by production. However, federal leases have no such clause, allowing one well to hold an entire lease.

In Wyoming, federal oil and gas lease sales are held on even numbered months (except for April 1996), usually in Cheyenne. Parcels usually contain 40 to 2,000 acres. Parcel lists are available about six weeks before the sale date. Since August 1996, only lands requested for lease are offered. Before August 1996 virtually all federal lands available for lease were offered. Federal oil and gas leases contain restrictive stipulations which protect other resource values.

The number of federal acres in the BFOA offered for lease, and leased, on a sale-by-sale basis is shown in figure 5. Note the abrupt increase in acreage leased during the June-December 1998 lease sales; a result of interest in CBM. The additional acreage was mostly in Johnson and Sheridan counties. Total bonus bids for each sale and the average per-acre bid for federal oil and gas leases in the BFOA on a sale-by-sale basis are shown in figure 6. Note the steady decline in average per-acre bid prices until December 1995. The increase in bids starting in December 1995 and the substantial increase starting in August 1997, are due almost entirely to increased interest in CBM. Since December 1998 the amount of acreage and bonus money received has dropped substantially. This is probably because nearly all available federal acreage is under lease. During 1997 and 1998, 675 leases were sold competitively; the average lease size was 1,004 acres; and, 81 of the leases were more than 2,000 acres in size.

From February 1990 through August 1999 approximately $83 million in federal oil and gas lease bonuses was received by the BLM for land in the BFOA. An estimated $51 million was a direct result of leasing for CBM. Maps 5 and 6 are contour maps of average dollar-per-acre bids compiled on a township-by-township basis. These maps compare federal oil and gas leasing in 1995 and 1998. Note that most of the leasing activity was in the BFOA. Sale-by-sale results of federal oil and gas leasing is shown in figure 6.

The amount of federal oil and gas acreage under lease in the BFOA each year from 1985 through 1993 ranged from 2.3 to 3.4 million acres. From 1988 through 1995, the amount of acreage leased annually in the BFOA decreased from 301,000 acres to 143,000 acres. In June 1999, 2.63 million acres of federal oil and gas were under lease in the BFOA. During 1998, 660,608 acres were leased competitively in the BFOA. As shown in figures 5 and 6 this amount of acreage is unusually high. The lease results on maps 5 and 6 were compiled on a township-by-township basis. These maps show the dramatic change in leasing in the CBM play area.

Although federal leasing increased sharply in 1998, and federal leases do not contain a Pugh clause, the amount or federal oil and gas acreage under lease will probably not

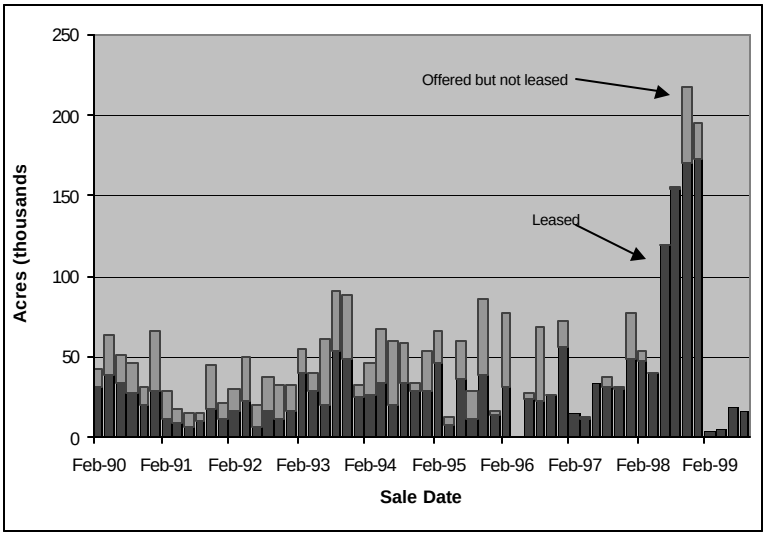


Figure 5: Federal Oil and Gas Lease Sale Results for BFOA.

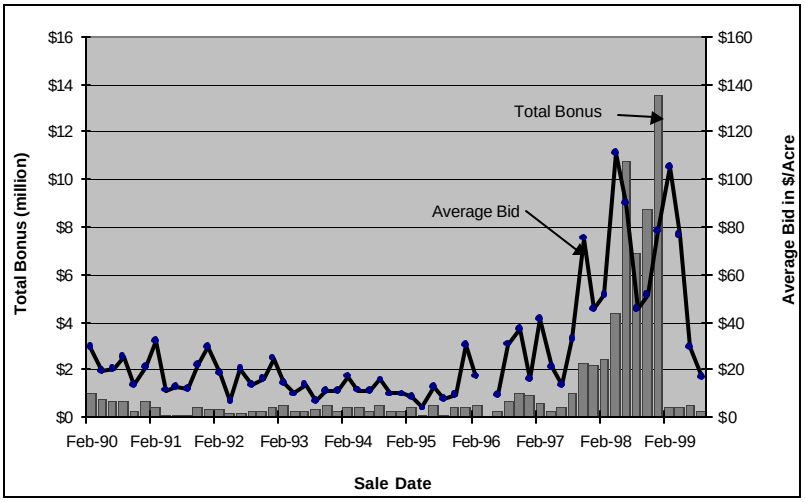
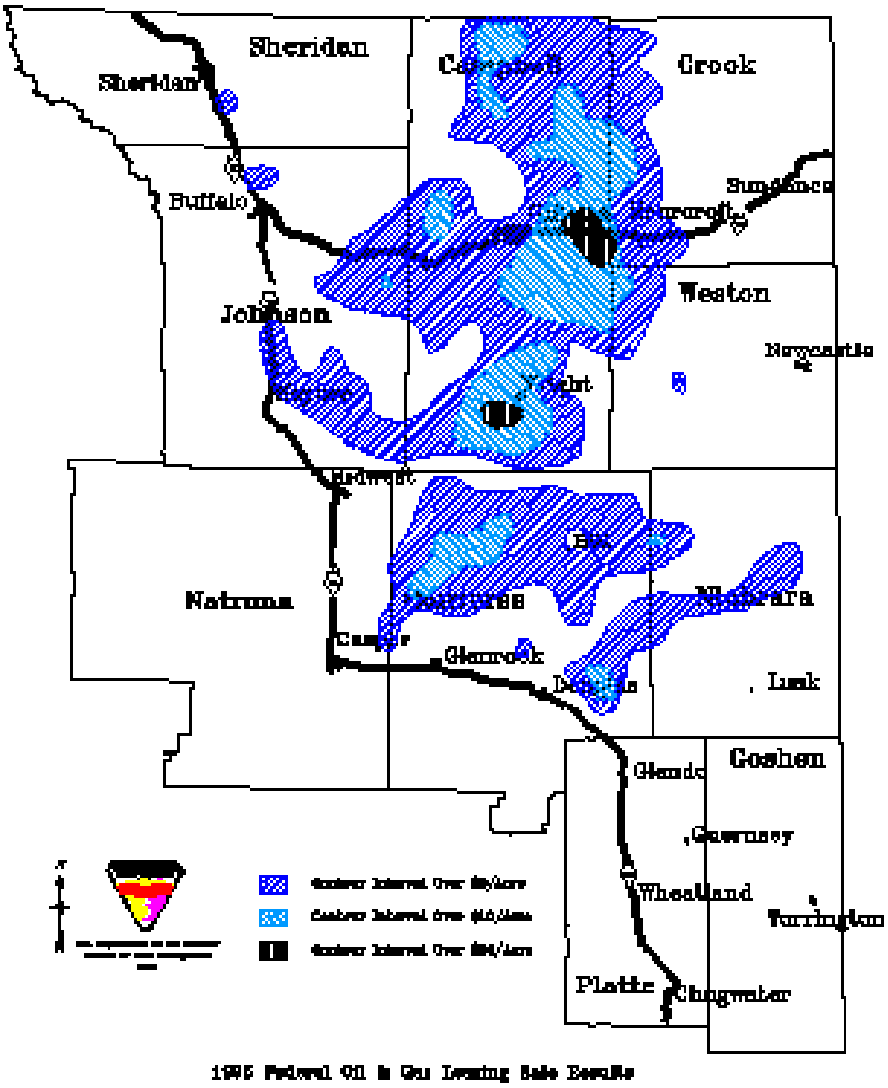
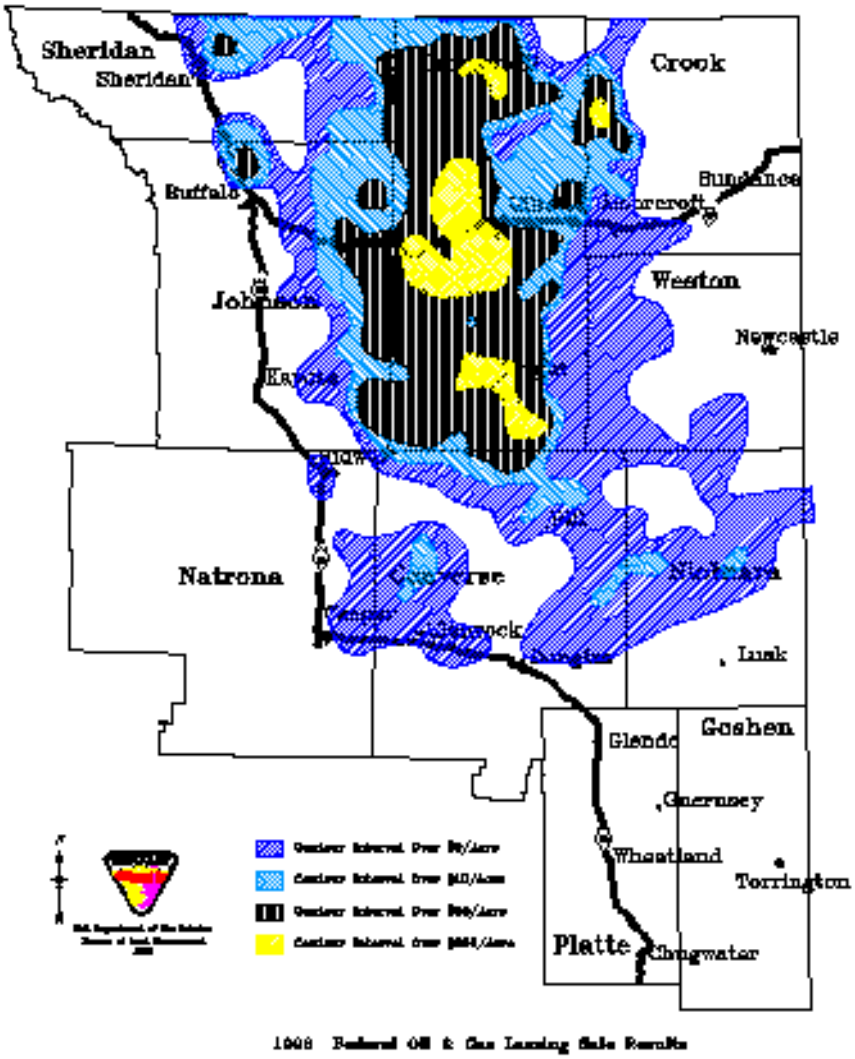


Figure 6: Federal Oil and Gas Lease Sale Results for Acreage in the BFOA.



1995 Federal Oil & Gas Leasing Sale Results

Map 5: Average Dollar-per-acre Bids from 1995 Federal Oil and Gas Lease Sales. Data were compiled on a township-by-township basis from federal lease sale results. Contour intervals are $2.00, $10.00, $50.00 per acre.



Map 6: Average Dollar-per-acre Bids from 1998 Federal Oil and Gas Lease Sales. Data were compiled on a township-by-township basis. Contour intervals are $2.00, $10.00, $50.00, $200.00 per acre.

decrease substantially after the primary lease term (10 years) is reached. Many of the federal leases in the CBM play area are very large (more than 1,000 acres), and the entire lease will be held by production until the last well ceases production. For most leases this will be many years beyond the primary term. Because many leases will be held by production it will be more difficult for individuals to acquire adequate acreage for drilling deals to drill the deeper horizons. This will probably suppress development of the deeper oil and gas horizons in the CBM play area. The amount of federal oil and gas acreage under lease during the next five to ten years is projected to be between 1.5 and 3.0 million acres. The amount of federal oil and gas acreage leased annually during the next five to ten years is projected to average between 100,00 and 500,000 acres. Average bids on a sale-by-sale basis are estimated to be between $10 and $50 per acre. Because a large amount of federal acreage has been leased in the past two years the amount leased during the next several years will probably be less than the 1990 through 1998 average.

A long-term price increase for oil or a new play could change the picture substantially. If prices increase or if a new play develops, the amount of acreage leased, average per acre bids, and total acreage under lease would increase. Likewise if anticipated price and play developments are more negative than anticipated these acreage and dollar numbers will be less.

SEISMIC SURVEYS

Seismic surveys on BLM-administered public surface are authorized by approval of Notices of Intent to Conduct Geophysical Operations (NOIs). From 1984 through 1998 the number of NOIs approved by the BFOA manager has decreased substantially (figure 7). These NOIs are for BLM-administered surface only. Until a sustained oil price in excess of $30.00 per barrel occurs the number of NOIs will probably remain low. However, it is questionable whether a significant increase NOIs would occur even with an increase in oil price because of the extensive seismic coverage over most of the BFOA. Much of this data could probably be reprocessed instead of collecting new seismic data.

During the past several years there has been increasing interest in 3-D seismic surveys. Although these surveys are more expensive than conventional 2-D seismic surveys, they provide a three-dimensional picture of the subsurface. Most 3-D surveys have been over or near oil fields in eastern Campbell County where there is little BLM-managed surface. However, the success of 3-D seismic surveys probably will increase the number of NOIs in the BFOA to more than about 15 per year. Seismic data is not generally used in the CBM play; therefore, activity in this play is not expected to increase the number of NOIs in the BFOA.

In summary, during the next ten years NOIs will probably average 15 or fewer per year. Most of the seismic activity will probably be in Campbell County. It is unlikely that the number of NOIs will increase significantly unless nonCBM oil and gas activity in western Campbell, or eastern or southern Johnson counties increases substantially; however, this is not considered likely.

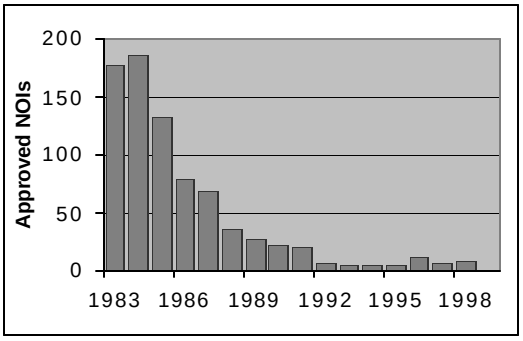


Figure 7: Approved NOIs to Conduct Geophysical Operations on BLM-administered Public Surface.

DRILLING OPERATIONS

Before a federal oil or gas well is drilled, an application to drill (APD) must be approved by the BLM. Figure 8 shows the total and federal APDs from 1985 to 1999. During this time period, there were 1,397 federal and 2,851 total APDs approved. Approximately 50% of total APDs were federal; approximately 80% of the approved APDs were drilled.

Historical data indicate there is a direct, but imprecise, correlation between the number of approved nonCBM APDs in the BFOA and oil price. Although not shown here, this correlation seems to indicate that a sharp increase in APDs and wells should not be expected until oil prices are $25 to $30 per barrel for a sustained time period.

Based on historical precedents, it is estimated that during the next five to ten years the annual average number of nonCBM APDs will range between 100 and 300, and possibly be as high as 400 although this is not likely unless oil prices increase to $25 to $30 per barrel for at least a few years. The number of federal APDs will probably average about 50% of total APDs. Federal APDs will probably average between 30 and 150 annually.

The number of wells drilled to develop CBM has greatly exceeded the number of all other wells since 1996. This trend will almost certainly continue during the next five to ten years. As many as 70,000 productive CBM wells may eventually be drilled with as many as 35,000 drilled by 2010.

General areas of anticipated development activity in the BFOA are shown on map 2. This map was drawn based on past drilling locations, the oil and gas plays outlined by Dolton, et al. (1990), Glaser (1992), federal oil and gas lease sale results, and a general knowledge of Powder River Basin geology. This map shows the general areas of anticipated drilling activity, exclusive of CBM, during the next five to ten years.
Discovery of new oil and gas fields is a virtual certainty. The number and size of new fields that will be discovered is difficult to predict with a high degree of confidence; however, some estimates are possible. As figure 9 shows the number of new oil and gas fields discovered has been somewhat erratic but trends upward until the 1981 through1985 interval then trends downward. The number of new field discoveries may have peaked in the mid-1980s and is now trending downward. Most of the new fields discovered during the next several years will be CBM fields.

The size of new field discoveries as measured by the number of wells producing in 1997 shows a distinct downward trend over time (figure 9). This trend suggests that newly discovered nonCBM fields will average less than ten productive wells per field. About 20% of the nonCBM fields discovered since 1980 are one well fields that will produce less than 30,000 barrels of oil and are probably uneconomic. Many of the fields discovered since the mid-1980s are productive from the Minnelusa Formation. These fields typically have fewer than ten productive wells but usually have relatively high oil recoveries on a per-well basis.

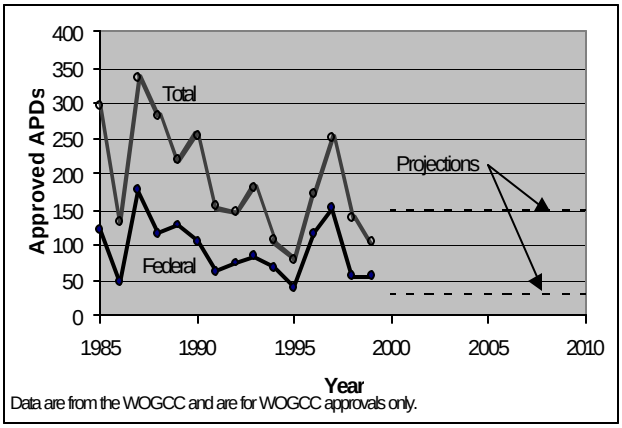


Figure 8: Approved nonCBM APDs and Projections Through 2010.

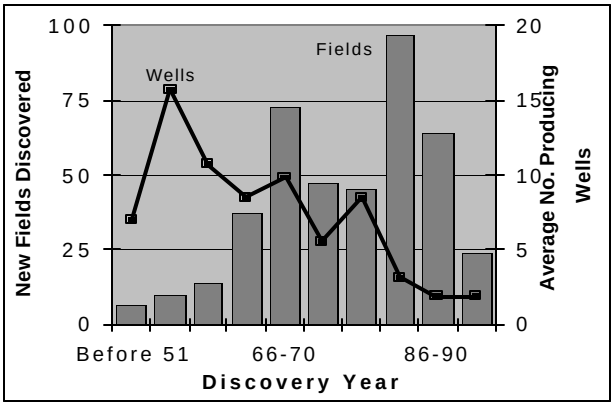


Figure 9: New Oil and Gas Fields Discovered and Average Number of Producing Wells (in 1997) per Field. SOURCE: WOGCC.

Historical president indicates the number of new, nonCBM field discoveries should average between two and ten annually over the next ten years. Average field size of new discoveries will probably be fewer than ten productive wells per field. Between 1981 and 1990 an average of 16 nonCBM, oil and gas fields were discovered annually in the BFOA. It is unlikely this pace of new field discoveries will occur again.

These well, discovery, and field size estimates are based on past activity and may be less than what actually happens if price and play developments are more positive than anticipated. If exploration in existing plays is disappointing, new plays are not developed, and commodity prices are less than anticipated, these estimates may be optimistic.

Coalbed Methane Wells

CBM development is currently undergoing a "boom" in the BFOA. Figure 10 shows the number of approved CBM APDs. Note the ten-fold increase since 1995. This "boom" will almost certainly continue for a few more years, with the eastern side of the CBM development area (map 3) being established first. Because the western part of the CBM area contains a larger amount of federal mineral acreage than the eastern part of the

CBM play area, delays in approving federal APDs may slow development in the western part of the area.

Based on maximum CBM resources (15,859 bcfg) estimated by the PGC (1998), and an average recovery of 0.20 bcfg per well a total of as many as 70,000 CBM wells could be drilled during the life of the play. Based on reasonable estimates for well completion rates as many as 35,000 productive wells may be drilled by 2010. These estimates may be revised upward if estimates of recoverable resources are revised upward as new and better data become available. Figure 11 shows one possible scenario for wells drilled annually and productive wells in the BFOA. It must be remembered these are estimates based on very incomplete data.

Most CBM drilling will be confined to the main CBM development area (map 2). However, some CBM development outside this area should be expected.

Figure 12 shows the estimated number of active drill rigs that would be required to drill the wells shown in figure 11. The assumptions used to calculate figure 12 are listed below.

Figures 11 and 12 were calculated from PGC report (1998) estimates and a series of technical assumptions. That report estimated the amount of CBM present ". . . not subject to the assumptions of the time of development of the resource, life span of the natural gas industry, or specific price to be paid for the produced gas" (Potential Gas Committee 1998; p. 161). In other words, the amount of recoverable CBM in the ground was estimated, not the amount that will be recovered during a specific time interval. The estimates in figure 12 are reasonable based on the currently available data, but will almost certainly change as better data become available. It is reasonable to expect between

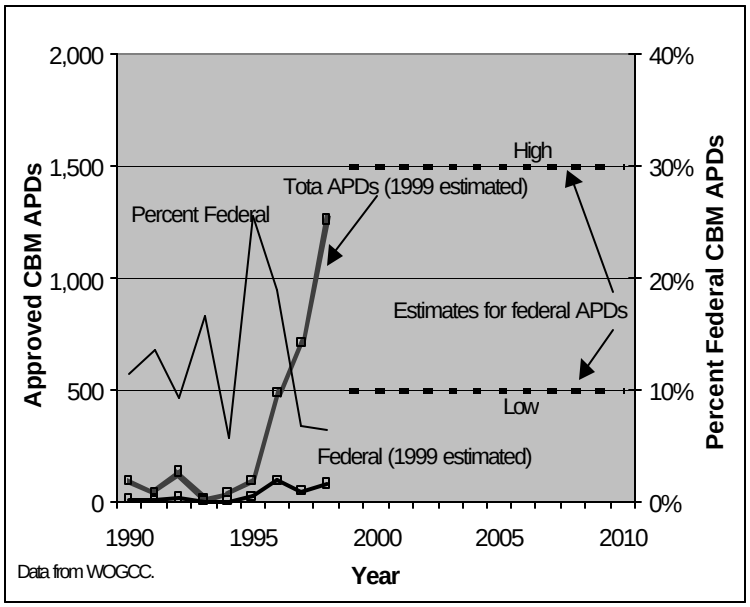


Figure 10: Total and Federal Approved APDs for CBM Wells in the BFOA.

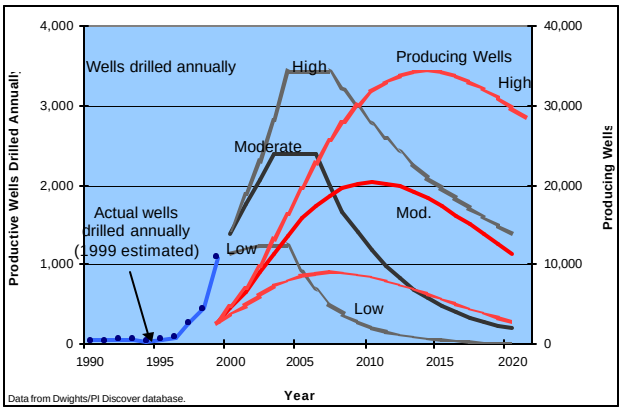


Figure 11: Possible Scenario for CBM Wells Drilled Annually and the Number of Producing CBM Wells. Projections are keyed to resource estimates by the Potential Gas Committee, 1998.

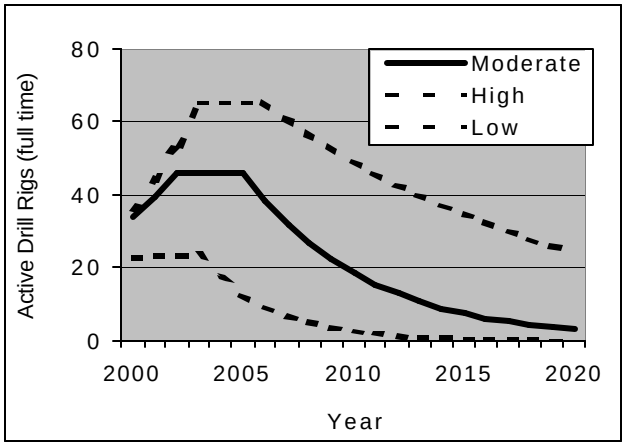


Figure 12: Estimates for Active Drill Rigs Required to Drill Wells.

9,000 and 33,000 additional productive wells will be drilled in the BFOA during the next ten years. These well estimates may be revised upward if resource estimates are revised upward. About 90% of the projected activity is expected to be in the BFOA.

Assumptions and methodology used are listed below.

1. Maximum wells were calculated by dividing assumed average per well recovery of 0.20 bcfg per well (minimum) into 15,859 bcfg (maximum PGC estimate).

2. Minimum wells were calculated by dividing assumed average per-well recovery of 0.40 bcfg/well (maximum) into 4,664 bcfg (minimum PGC estimate).

3. Completion rate for wells 0-1,100 feet deep is 61 wells/year/drill rig.

4. Completion rate for wells over 1,100 feet is 40 wells/year/drill rig.

5. Of the wells drilled, 30% will be deeper than 1,100 feet.

6. Estimated ultimate recoverable reserves are 15,859 bcfg maximum, 9,329 bcfg most likely, and 4.664 bcfg minimum.

7. Of the CBM reserves estimated by the PGC, 90% are in the BFOA.

8. Incline and decline rates for annual well completions were selected to generate ultimate well numbers which match the calculated well numbers for high, moderate, and low well estimates based on estimated ultimate reserves and assumed per-well recoveries.

9. Curves for annual wells drilled were calculated to approximately match the shape of the drilling history curve for the “D” and “J” sandstone play in western Nebraska.

10. Wells were assumed to be abandoned at the following rate: eight years-13%;, 13 years-50%; 18 years-80%; and, 23 years-100%.

CBM development forecasts for previous planning and environmental analyses in the Powder River Basin/BFOA have been impaired by a lack of adequate data, in particular by inaccurate estimates of gas-in-place. The primary method of measuring gas content in coals is by measuring gas desorption from core samples. It is now known that measurements obtained by early CBM development activities used procedures that allowed substantial errors to occur.

Recent research by the Gas Research Institute (Mavor and Nelson, 1997) documents a variety of errors that can affect estimates of in-situ gas content. The following primary errors were identified: use of drill cuttings rather than cores to estimate gas content resulting in errors of approximately -25%; conducting gas desorption measurements at ambient rather than reservoir temperatures resulting in errors of approximately -60 to 70%

in lost gas calculations and -30% in total gas calculations; and, use of incorrect average coal densities, resulting in errors of approximately -10 to 13%. The publicly available data from the early projects indicates that some of the desorptions were made from cuttings rather than cores, and that the core desorptions were conducted at ambient rather than reservoir temperatures. Density logs were generally collected; however, their uses cannot be determined from the records available.

Our current knowledge indicates that the early coal gas measurements, on which development forecasts and planning/environmental reviews were based, used procedures that were technically incorrect. The measurement errors that were made systematically underestimated the *in-situ* coal gas content. As a result, gas-in-place estimates inevitably underestimated CBM resource volumes, making accurate projections of drilling and production impossible. Until better data are obtained, we can only state with certainty that CBM resource estimates will increase and drilling and production will exceed expected levels. The magnitude of these increases cannot be determined with the data presently available. Given these uncertainties and previous experience with CBM development, it is probably prudent to plan for the higher levels of development, as shown in figure 13.

The BLM Reservoir Management Group/USGS cooperative coalbed methane project is currently collecting more accurate gas content data. Continuous cores of entire coal seam thicknesses are being desorbed using current industry standard practices, including desorption at reservoir temperatures and direct density measurements of coal core samples. When these data are available and analyzed, beginning in mid-to-late 2000, more accurate estimates of gas-in-place can be made and more reasonable development forecasts can be derived.

Horizontal Wells

Horizontal drilling results in the BFOA have been disappointing. If future attempts are successful in exploiting oil and gas reserves in the Niobrara or other formations, horizontal drilling in the BFOA could rise abruptly. Because of this uncertainty, estimates of horizontal wells drilled per-year range from two to ten or higher.

OIL AND GAS PRODUCTION

Oil and gas production from wells on federal, fee, and state minerals is shown in figures 14 and 15. Oil production from 1984 to1991 was relatively stable but has declined sharply since 1991. The decline averaged 8% per year from 1991 to1998. From 1990 to 1995 oil production from wells on federal minerals averaged 51% of the total oil production.

Oil production will probably continue to decline about five to eight percent per year unless large new discoveries are made, or there is a long term increase in oil prices. An oil price increase would stimulate the search for new deposits, allow old fields to be produced longer, and allow increased use of enhanced oil recovery (EOR) methods. If inexpensive carbon dioxide becomes available then EOR would also be more likely. It is however,

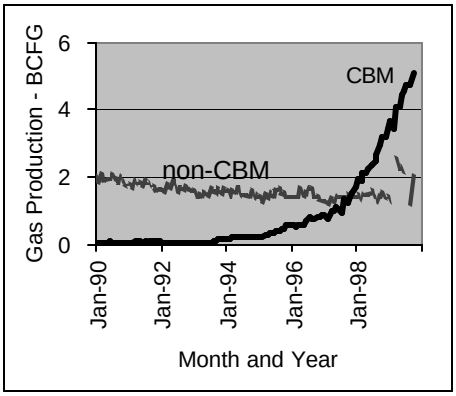


Figure 13: CBM and nonCBM gas production from BFOA. SOURCE: WOGCC and Dwights/PI.

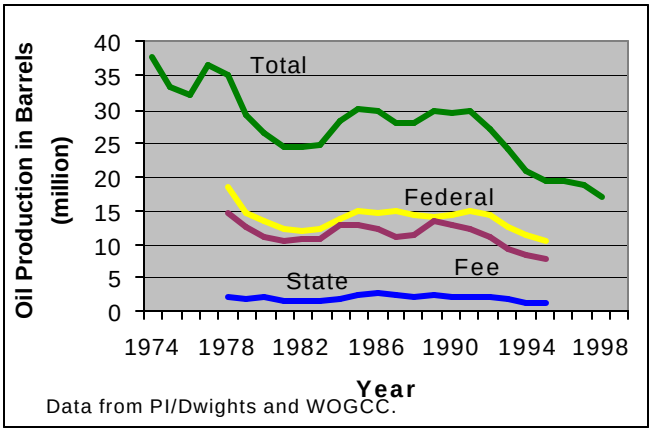


Figure 14: *Oil Production* from Federal, Fee, and State Wells in the BFOA.

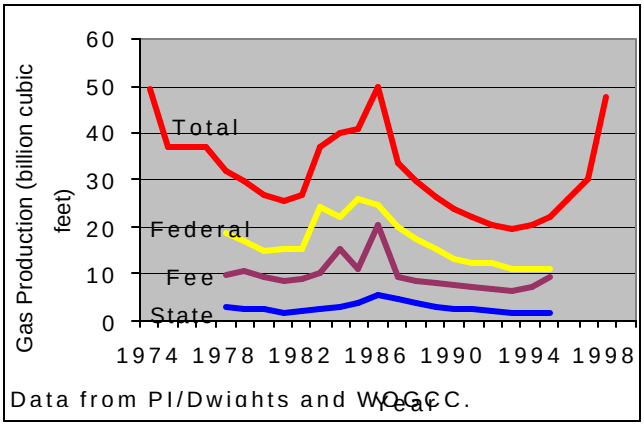


Figure 15: *Gas Production* from Federal, Fee, and State Wells in the BFOA. The abrupt increase since 1996 is caused by CBM production.

unlikely that annual oil production will again reach 30 mmb.

Gas production has been much more erratic (figure 15). Total gas production declined 53% from 1987 to1994. In 1994 CBM was only 12% of total gas production in the BFOA. The gas production decline was reversed in 1995 due to increasing CBM production. Total gas production increased 21% per year since 1994. This trend is expected to continue.

Total gas production will increase substantially over the next three years due to CBM development. CBM production from federal leases will increase at a faster rate than total CBM production.

Federal CBM production is only about 15% of the total CBM production in the BFOA (figure 15). Eventually federal CBM production should increase to about 50% of total CBM production. During October 1999, CBM wells in the BFOA produced 5.96 bcfg.

Large quantities of water are produced with CBM. During June 1999, 3.4 barrels of water were produced for every thousand cubic foot of CBM. This ratio should decrease over time because water production generally declines during the life of a CBM well. Figure 16 shows water production associated with CBM production in the BFOA. During June 1999, 14 million barrels of water (1,800 acre-feet) were produced in the BFOA.

The total number of nonCBM producing wells in the BFOA increased from 1978 to 1984 but has decreased since 1990. The number of producing nonCBM wells will probably continue to decline during the next five to ten years. From 1990 to 1995, about 50% of the total producing wells in the BFOA were federal wells. Between 1990 and 1994, 58 more nonCBM federal wells were abandoned per year than were drilled per year. This trend is expected to continue, but the number of wells plugged in excess of the number of new wells drilled will probably decrease.

It is anticipated that during the next five to ten years the total number of producing nonCBM wells will continue to decline, although there may be a few year-to-year increases. The number of productive federal wells will probably average about 50% of total productive wells.

CONCLUSIONS

A “boom” in CBM development is currently underway in the BFOA. Gas production has increased sharply and will probably continue increasing sharply for the next few years. Oil and gas development, exclusive of CBM, will continue to slowly decline. Oil production will continue to decline. Seismic activity as measured by the number of approved NOIs, has increased from the low activity levels of the early 1990s but will probably not go much higher. The amount of federal acreage under lease has increased substantially since 1997. Because federal leases do not contain a pugh clause much of the federal acreage under lease in the CBM area will be held by production for many years after the primary

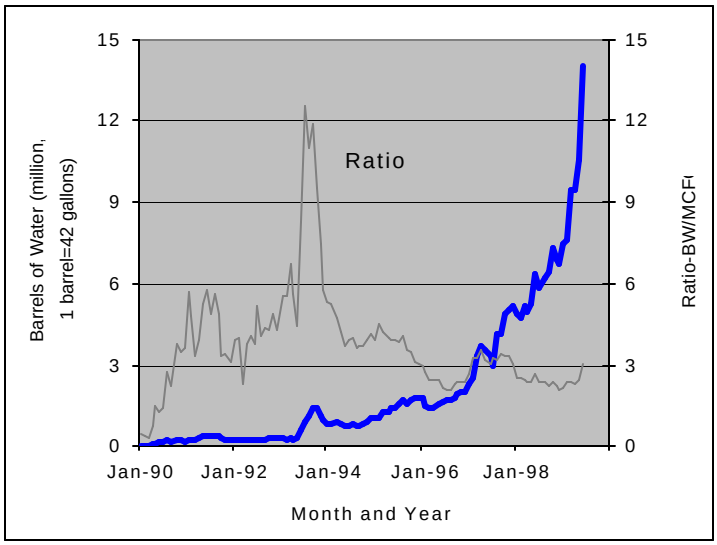


Figure 16: Water Production Associated with CBM Production in the BFOA. One million barrels of water is equivalent to 129 acre-feet. SOURCE: WOGCC.

lease term.

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GLOSSARY

Abandon To cease producing oil and/or gas from a well. This may involve several steps: one or more cement plugs are placed in the borehole to prevent migration of fluids between the different formations, equipment is removed, and the wellsite is reclaimed.

Acquired Minerals Mineral rights that were patented into nonfederal ownership and were later reacquired by the United States. In the Thunder Basin National Grassland this was through Title III of the Bankhead-Jones Farm Tenant Act of 1937.

APD Application to drill an oil and gas well. For a proposed well on federal surface an APD must be filed with and approved by the Wyoming Oil and Gas Conservation Commission and the Bureau of Land Management.

BCFG Billion cubic feet of gas.

BLM Bureau of Land Management, U. S. Department of Interior.

BOPD Barrels of oil per day, this is usually the unit of measure for oil production at the wellhead. One barrel is 42 U.S. gallons.

BOE Barrels of oil equivalent. Gas volume is converted to barrels of oil according to some ratio often 6:1.

BFOA Buffalo Field Office area, comprised of Campbell, Johnson, and Sheridan counties, Wyoming.

CBM Coalbed methane, natural gas originating from and residing in coal beds.

Development Potential Oil and gas development potentials are based on estimated average drilling density and are defined as follows: HIGH--over one well/township/year, MODERATE–-0.2 to 1.0 wells/township/year, LOW--less than 0.2 wells/township/year, VERY LOW-- less than 0.02 wells/town ship/year, ZERO--no drilling.

Dry Hole An oil and gas well that did not encounter economic quantities of oil or gas when it was drilled. Dry holes are usually plugged within a day or two after the target depth is reached.

Enhanced Oil Recovery (EOR) A process where chemicals such as surfactants or carbon dioxide are injected into the reservoir to mix with the oil so that additional oil can be recovered.

MBO Thousand of barrels of oil.

MCFGPD Thousand cubic feet of gas at one atmosphere pressure, this is usually the unit of measure for gas flow at the wellhead.

MMBO Million barrels of oil.

MMCFG Million cubic feet of gas at one atmosphere pressure.

NEPA National Environmental Policy Act

NEPA Process A procedure involving environmental analyses and public comment whereby management of natural resources may be changed.

New Field Discovery A well, usually a wildcat well, that discovers a previously unknown oil and gas field.

Occurrence Potential HIGH--There is a demonstrated existence of petroleum source, reservoir quality strata, and traps. Areas of high potential have discovered oil occurrences or free oil recovery from well tests. MODERATE--There is direct or indirect geological evidence that petroleum source, reservoir quality strata, and trapping mechanisms are present. Discovered occurrences are not present but there may be shows of oil in core or drill stem tests. LOW--There is geological evidence that a petroleum source, reservoir quality strata, or trapping mechanisms are not present. NONE--There is a demonstrated absence of a petroleum source, reservoir quality strata, or trapping mechanisms. Demonstrated absence means physical evidence documented in geological literature.

Oil and Gas Field A natural accumulation of oil and gas in the subsurface. Oil and gas may be present in two or more reservoirs at different depths.

Oil and Gas Lease A federal oil and gas lease is a legal document that gives the lease holder the right to explore for and develop any oil and gas that may be present under the area designated in the lease while complying with any surface use conditions which may have been stipulated when the lease was issued.

Oil and Gas Reservoir A geologic layer containing hydrocarbons and enough porosity and permeability so that the hydrocarbons can be produced.

Play The geographic extent of an oil and/or gas bearing formation or interval.

Public Domain Minerals Mineral rights that have always been the property of the United States.

Pugh Clause A term in an oil and gas lease that prevents a productive well from holding acreage not allocated to that well. In other words if well spacing is 40 acres/well, one well cannot keep more than 40 acres of the oil and gas lease from expiring after the primary

term of the lease.

Secondary Recovery A process whereby pressure in an oil and gas reservoir is artificially maintained or increased so that more oil can be recovered. This is usually done by injecting water or natural gas into the reservoir.

Spud Begin drilling a well.

TBNG Thunder Basin National Grassland.

USFS United States Forest Service, U.S. Dept. of Agriculture.

Wildcat Well An test well drilled for the purpose of locating an undiscovered oil and/or gas field.

WYOGCC Wyoming Oil and Gas Conservation Commission

APPENDIX D

Coal Screening Process

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INTRODUCTION

This report documents the results of applying the coal screening process to federal coal lands within the central and northern portions of the Powder River Basin, Wyoming. This process is directed by regulations pertaining to the Federal Coal Program as outlined in 43 CFR part 3461. The coal screen was completed for use in updating the 1985 Buffalo Resource Management Plan (RMP) and the Thunder Basin National Grassland planning documents. This report was prepared in cooperation with the U.S. Forest Service (FS), Douglas Ranger District, Douglas, Wyoming for lands within the Thunder Basin National Grasslands.

This report forms the basis for future coal leasing decisions and planning efforts and plan amendments for the Bureau of Land Management's (BLM) Buffalo RMP and the U.S. Forest Service plans currently in existence.

The Secretary of the Interior may not hold a competitive coal lease sale unless the lands containing the coal deposits have been included in a comprehensive land use plan. This has been completed for the coal areas in the Gillette and Sheridan areas of Wyoming. The BLM is currently operating under the 1985 Buffalo Resource Area (BRA) RMP for lands in the Gillette and Sheridan areas. The U.S. Forest Service, Thunder Basin National Grassland, is in the process of amending their current plan.

PROCEDURE

The major land use planning decision concerning the coal resource shall be the identification of areas acceptable for further consideration for leasing. This decision is based on the coal screening process. The coal screen is a four-part process consisting of the following steps:

1. Identify areas with coal development potential.

2. Apply the coal unsuitability criteria (20 criteria).

3. Assess multiple land use considerations.

4. Consult with surface owners concerning surface mining of federal coal under their private surface.

Each of the four coal screens must be completed and analyzed. The results are used in the RMPs to decide how to best manage the lands and which lands to manage.

<u>Coal Development Potential</u>

This is the first of the four-part screen. Only areas having coal development potential shall be acceptable for further consideration for leasing. The areas having coal development

potential are determined by the BLM with available data and any data submitted by the public or state agencies supporting coal development potential.

Coal development potential does not necessarily include all lands underlain by coal; only those lands that have development (mining) potential at the time of this analysis. Changes in the development potential with time will alter the lands included in this study. Some of the main factors which affect development potential include coal thickness, coal quality, and depth.

Lands determined not to have development potential today may have development potential in the future. This may be caused by many factors including but not limited to coal price, coal demand, new mining techniques, and coal quality. Coal screening will be completed again when the coal market changes or periodically as determined by the agencies.

Coal Unsuitability Criteria

The second review category is coal unsuitability. These criteria were established by the Surface Mining Control and Reclamation Act (SMCRA) of 1977. The list of criteria cited in the act is expanded in 43 CFR 4361. Coal unsuitability criteria are applied to lands having development potential. These criteria evaluate the lands to determine if they are suitable for further consideration for mining.

There are 20 unsuitability criteria. These criteria evaluate cultural and environmental aspects which may be affected by mining. Also important are protection of air, water, wetlands, riparian areas, and sole source aquifers, and the effects mining may have on adjacent National Park System, National Wildlife Refuge System, National System of Trails, and the National Wild and Scenic River System lands. After the criteria are applied, the lands may be classified three ways:

1. Suitable for further consideration for coal mining

2. A deferred decision may be made if the data is inconclusive or subject to change

3. The area may be classified unsuitable for further consideration for mining.

A deferred decision will allow lands to be considered for leasing until such time as a lease application is received or a coal tract is established and a more detailed and up-to-date study can be completed. This includes situations where making the decision today would be premature because changes can be expected to occur between the time the unsuitability criteria are first applied and a lease sale takes place. Mining affects may also be minimized by attaching stipulations to leases or by determining certain lands unsuitable to mining by surface methods.

Multiple Use Considerations

The third screening category is a multiple-use analysis. The BLM and FS are multiple use agencies. That is, we manage public lands and allow usage by multiple resource

customers. In certain instances, customers will be competing with each other for use of the surface; each, however, using the surface for a different purpose.

The existence of a coal lease shall not preclude leasing of other minerals for development. If multiple minerals are leased appropriate stipulations shall be attached to the leases to allow for simultaneous development. The same applies for the initiation of coal leases after other mineral leases are granted.

Surface Owner Consultation

The fourth screen is surface owner consultation. The BLM and FS shall consult with qualified surface owners to determine if they are for or against surface mining. Any surface owner which previously gave written consent to any party to conduct surface mining shall be deemed to have expressed a preference for mining. A qualified surface owner is one who holds legal title to the surface of split estate land, has their principal place of residence on the land, or receives a significant portion of their income from the land and have met these conditions for at least three years. If a significant number of surface owners have expressed a preference against mining, the area may be considered not acceptable for further consideration for surface mining.

HISTORY OF COAL SCREENING PROCESS

9/25/1992	Meeting in Buffalo, WY with resource specialists and BLM Wyoming state office personnel. Assignments were made for each specialist to cover on coal unsuitability criteria (CUC).
3/4/1993	Meeting in Casper with BLM, FS, and U.S. Fish and Wildlife Service (FWS) on how to proceed. This meeting was cancelled and rescheduled 3/22/93.
3/22/93	Meeting in Casper with BLM, FS, and FWS to identify and begin analyzing 20 coal unsuitability criteria and how to proceed with the exceptions.
4/3/93	Continuation of 3/22/93 meeting in Casper with BLM, FS, and FWS.
1/20/1994	Continuation of 4/3/93 meeting with BLM, FS, and FWS on current status and how to get it done.
3/3/1994	Continuation of 1/20/94 meeting with BLM, FS, and FWS.

3/2/1994	Coal screening process schedule updated to get project done by end of March 1994.
7/21/1994	Meeting with FS on CUC and current status of maps.
8/94	Maps given to BLM members and FS on CUC; comments due back by 9/30/94.
2/14/1996	Analysis of missing unsuitability criteria by Casper District.
Summer 1996	Landowners abstracted from Campbell County records.
Fall 1996	Surface owner consultation letters prepared for Gillette area.
Spring 1997	Landowners abstracted from Sheridan County records.
11/97	Finish draft report for specialists review.

The coal screen process was extended several times due to change in philosophies in the analysis of the Buffalo RMP update. This is the reason for breaks in time during the several segments of the coal screening process.

SUMMARY AND CONCLUSIONS OF THE COAL SCREENING PROCESS

Figure 1 illustrates the areas which have been determined to be unsuitable as a result of application of the four coal screens. A decision as to whether an area is unsuitable or not has been deferred in many cases because the particular unsuitability criteria is not static. The criteria will be reevaluated at the time of leasing so that the most current data can be used in the evaluation of the criteria. This applies to most of the wildlife criteria because wildlife is known to move around. It also applies to most roads because they can be moved at a later date. Making a decision at this time is premature. The data is insufficient to make a reasonable decision as to unsuitability at this time. This is the same procedure used in the 1985 BLM RMP and 1985 FS Plan classification where a "suitable pending further study" decision was made.

Table 1 summarizes the coal availability for the BRA. This includes all the coal with development potential and areas where coal mining would be unsuitable.

RESULTS OF THE COAL SCREENING PROCESS

Coal Development Potential

Coal underlies most of the BRA. Some of the world's thickest coal deposits occur in Johnson and Campbell counties, Wyoming. Much of this immense coal resource is not currently available for development due to market and economic considerations. Much of

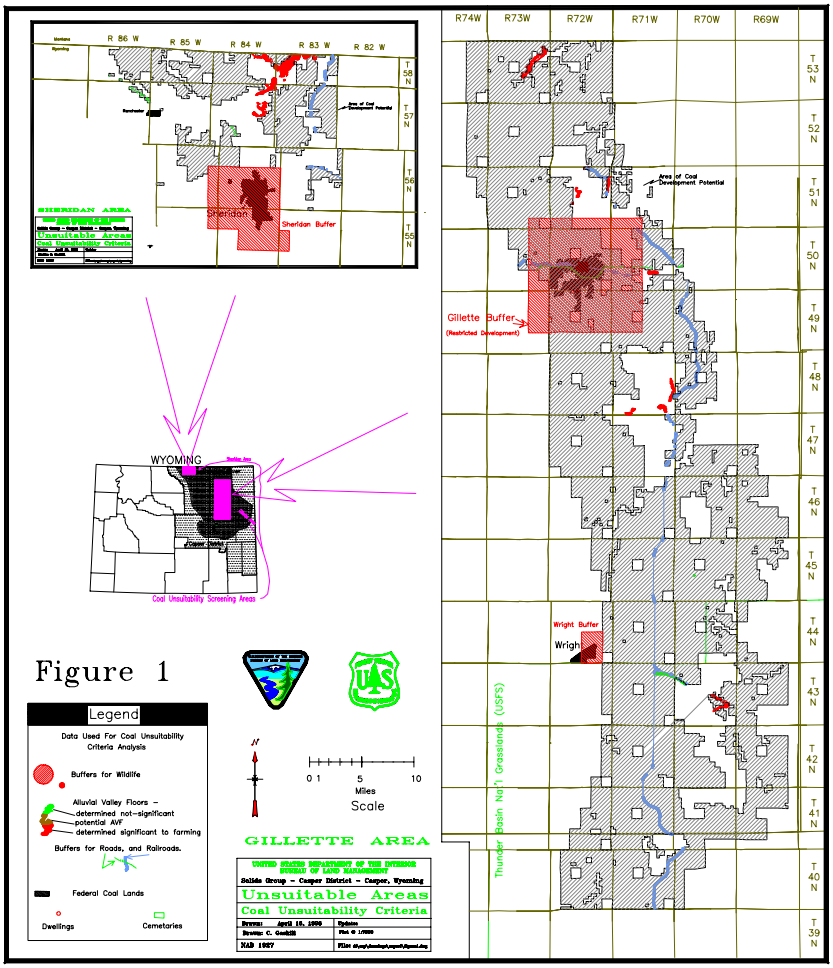
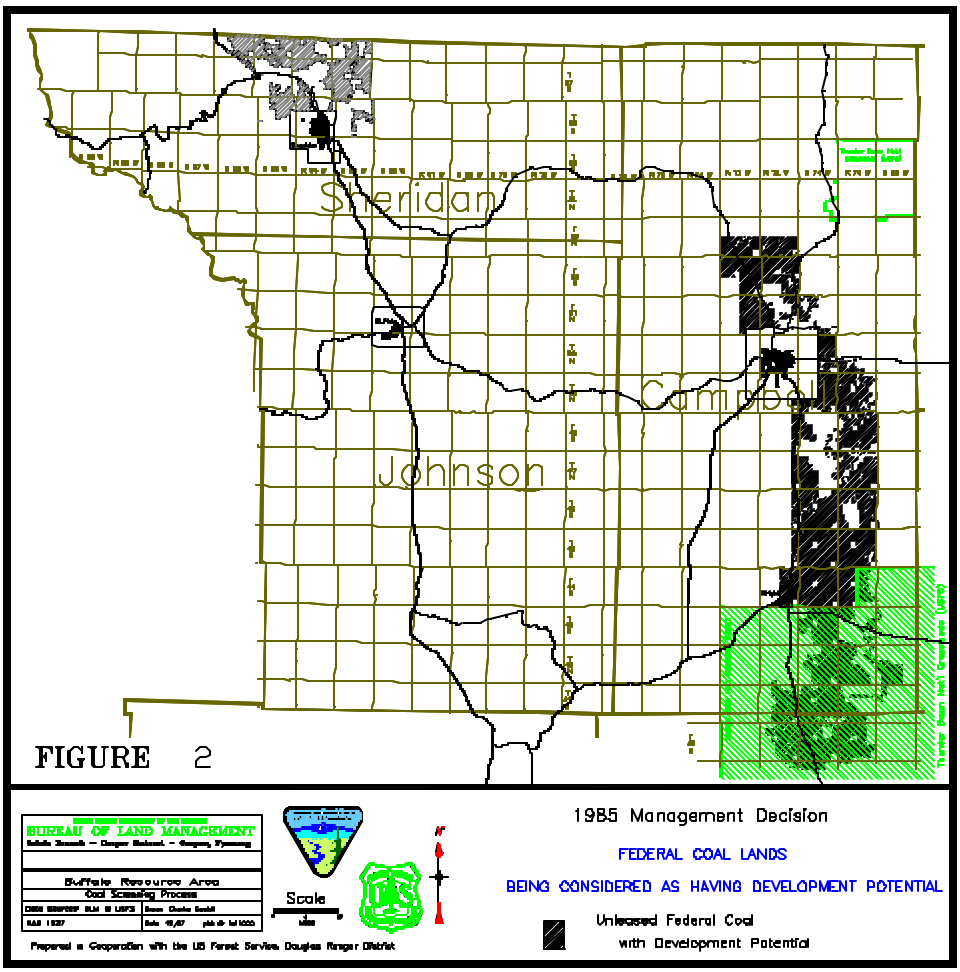

SHERIDAN AREA
Unsuitable Areas
Coal Unsuitability Criteria
Sheridan
Sheridan Buffer
Area of Coal Development Potential
R 86 W
R 85 W
R 84 W
R 83 W
R 82 W
T 58 N
T 57 N
T 56 N
T 55 N
WYOMING
Coal Unsuitability Screening Areas
Figure 1
Legend
Data Used For Coal Unsuitability Criteria Analysis
Buffers for Wildlife
Alluvial Valley Floors –
determined not-significant potential AVF
determined significant to farming
Buffers for Roads, and Railroads.
Federal Coal Lands
Dwellings
Cemeteries
Miles
Scale
GILLETTE AREA
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Salida Group – Casper District – Casper, Wyoming
Unsuitable Areas
Coal Unsuitability Criteria
Drawn: April 15, 1999
Drawn: C. Gaskill
Plot @ 1/1000
NAD 1927
R74W
R73W
R72W
R71W
R70W
R69W
T 53 N
T 52 N
T 51 N
T 50 N
T 49 N
T 48 N
T 47 N
T 46 N
T 45 N
T 44 N
T 43 N
T 42 N
T 41 N
T 40 N
T 39 N
Gillette Buffer
(Restricted Development)
Wright Buffer
Wright
Thunder Basin Nat'l Grasslands (USFS)

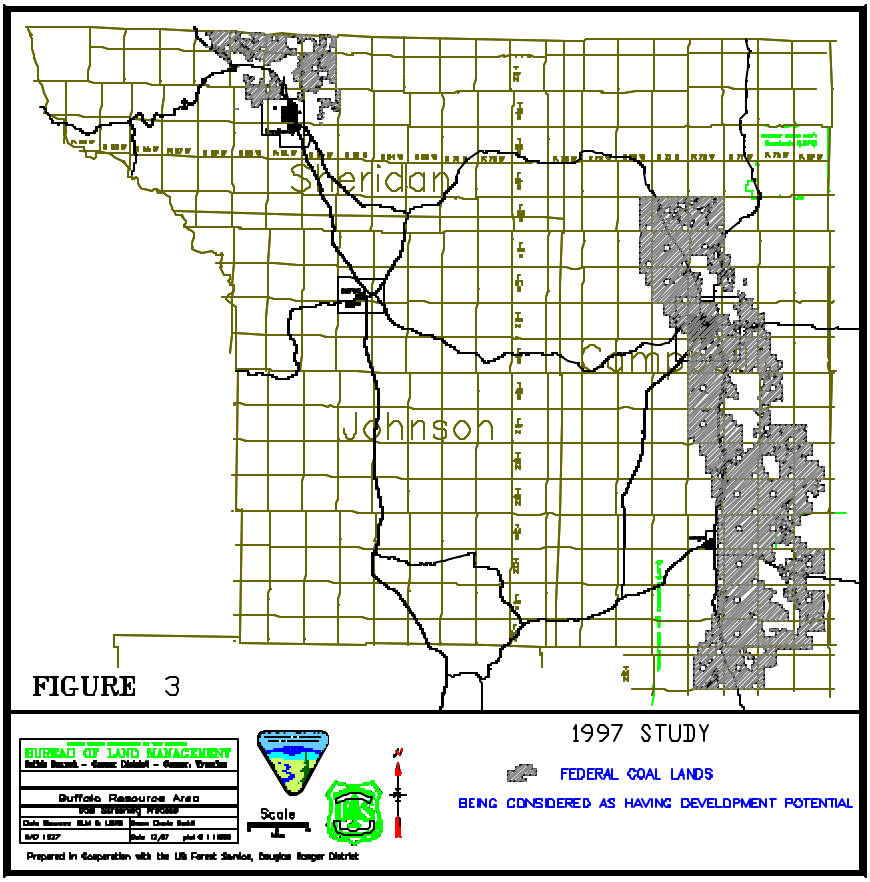
TABLE 1 UNSUITABILITY CRITERIA ASSESSMENT			
Area Determined Unsuitable	**Coal (billion tons)**	**Average Coal Thickness (feet)**	**Acres**
City Buffers	5.3	55	55,000
Roads = I-90	0.08	48	1,100
Roads = WY450 and rail	0.144	86	1,000
Rail = Main Trunk Line + Sheridan area (excludes WY450 and rail)	0.682	61	6,500
Rail = Sheridan area	0.02	20	500
Summary			
Total with development potential	50.25		494,000
Total determined unsuitable	6.2	56	63,600
Total Available	41.3	55	430,400

the thick coal is too deep to develop economically, and some is too poor quality (high sulfur, low Btu, or high ash). The coal is not thick everywhere. In some areas the thick coal splits into several thinner seams--each being too thin to mine. The entire resource area was analyzed in establishing the coal development potential areas.

Figure 2 illustrates the federal coal lands determined to have coal development potential under the 1985 Buffalo RMP and the 1985 FS plan. There are two areas identified. The largest area stretches from about 22 miles north of Gillette, Wyoming to about 25 miles south of Wright, Wyoming. This area is about 15 miles wide. The second area stretches from Sheridan, Wyoming to the Montana state line over an area about 20 miles wide.

This current study indicates the coal development potential areas should be made slightly larger. Figure 3 illustrates the federal coal lands determined to have coal development in today's market (based on this study). There are two areas identified again. The Sheridan area is the same as under current management. The Gillette area has changed slightly. It includes some additional lands east of the outcrop along most of the eastern border. There is one area southeast of Gillette that is slightly smaller than was determined in the current management situation. The northern end of the area is extended approximately 3


Sheridan
Johnson
Campbell
Thunder Basin Nat'l Grassland (USFS)
FIGURE 2
BUREAU OF LAND MANAGEMENT
Buffalo Resource Area
Coal Screening Process
Scale
1985 Management Decision
FEDERAL COAL LANDS
BEING CONSIDERED AS HAVING DEVELOPMENT POTENTIAL
Unleased Federal Coal
with Development Potential
Prepared in Cooperation with the US Forest Service Douglas Ranger District


Sheridan
Johnson
Campbell
FIGURE 3
BUREAU OF LAND MANAGEMENT
Buffalo Resource Area
Scale
1997 STUDY
FEDERAL COAL LANDS
BEING CONSIDERED AS HAVING DEVELOPMENT POTENTIAL
Prepared in Cooperation with the US Forest Service, Douglas Ranger District

miles. The southern end is retracted about 1 mile. The western boundary is variable. In some areas it is trimmed slightly and others areas are extended up to 6 miles in a westerly direction.

The Sheridan area contains about 73,200 acres of federal coal lands. These lands contain an estimated 2.75 billion tons of potentially minable coal. This estimate is based on three tract studies (Ash Creek, Hidden Water, and Youngs Creek) which gives a fair estimate of the resources in the tract areas and a very rough estimate of the remaining acreage included in the federal coal lands. The new Gillette development potential area contains about 494,000 acres of federal coal lands. These lands contain about 47.5 billion tons of coal averaging 55 feet thick. Table 2 summarizes the two areas with coal development potential.

TABLE 2
COAL DEVELOPMENT POTENTIAL

Area	Tons of Coal (billion)	Average Coal Thickness (feet)	Acres
Gillette	47.50	55	494,000
Sheridan	2.75	22	73,200
Total Reserves	50.25		567,200

The coal development potential area can be further subdivided into areas of high, medium, and low potential. Figure 4 illustrates the interpreted subdivisions based on coal thickness and quality.

Other areas in the Powder River Basin of Wyoming underlain by coal do not currently have development potential due to quality, thickness, and depth considerations. As economic conditions change, the development potential areas will be modified.

The remaining three coal screens will be applied to the coal development potential areas.

Details of the Application of the Unsuitability Criteria

The unsuitability criteria were analyzed by a team of resource specialists having knowledge of each of the criteria collectively. Members of the team were from the BLM, FS, and FWS.

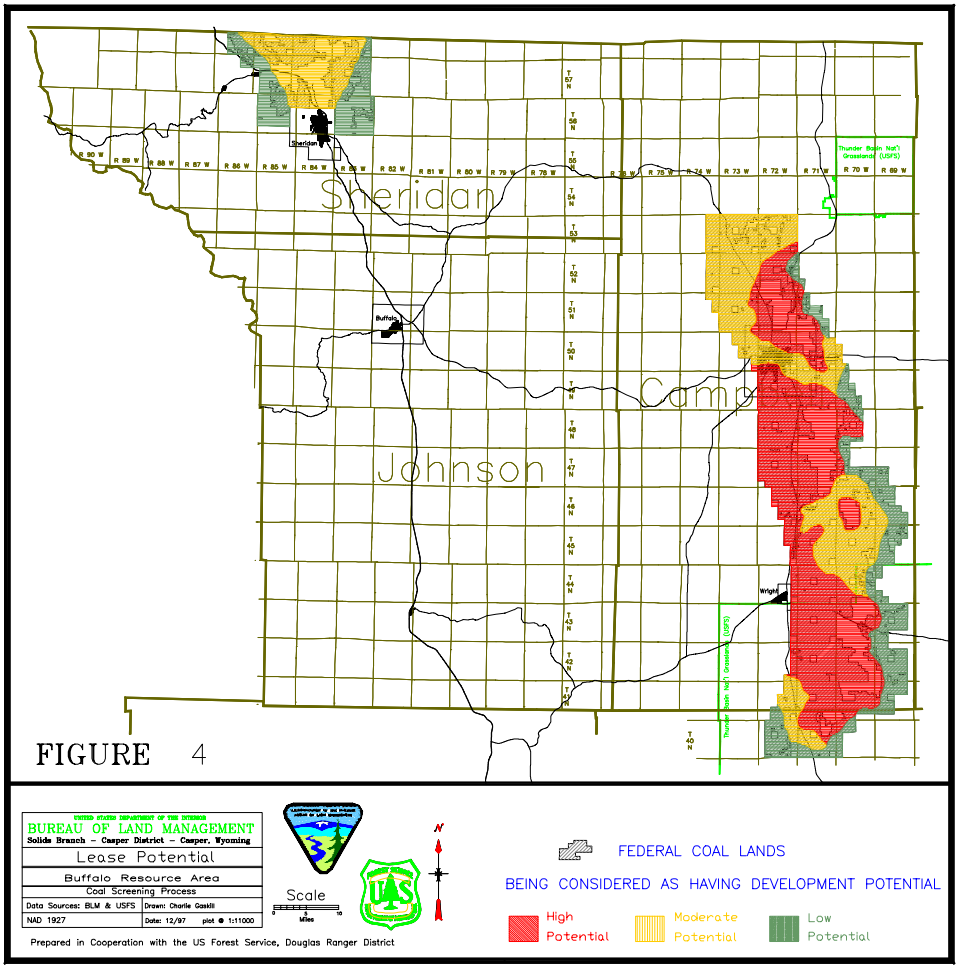


FIGURE 4

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Solids Branch – Casper District – Casper, Wyoming

Lease Potential

Buffalo Resource Area

Coal Screening Process

Data Sources: BLM & USFS	Drawn: Charlie Gaskill
NAD 1927	Date: 12/97 plot @ 1:11000

Scale
0 5 10
Miles

N

FEDERAL COAL LANDS
BEING CONSIDERED AS HAVING DEVELOPMENT POTENTIAL

High Potential
Moderate Potential
Low Potential

Prepared in Cooperation with the US Forest Service, Douglas Ranger District

Figure 5 illustrates the Sheridan and Gillette development potential areas at a larger scale so more detail can be seen. The grey shaded areas illustrate the areas considered in the application of the criteria. The specialists identified resource data which applied to each of the unsuitability criteria. These data are illustrated on Figure 5 and explained in the following detailed analysis.

Criterion #1 - Federal Land Systems

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.

(2) 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.

(3) 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.

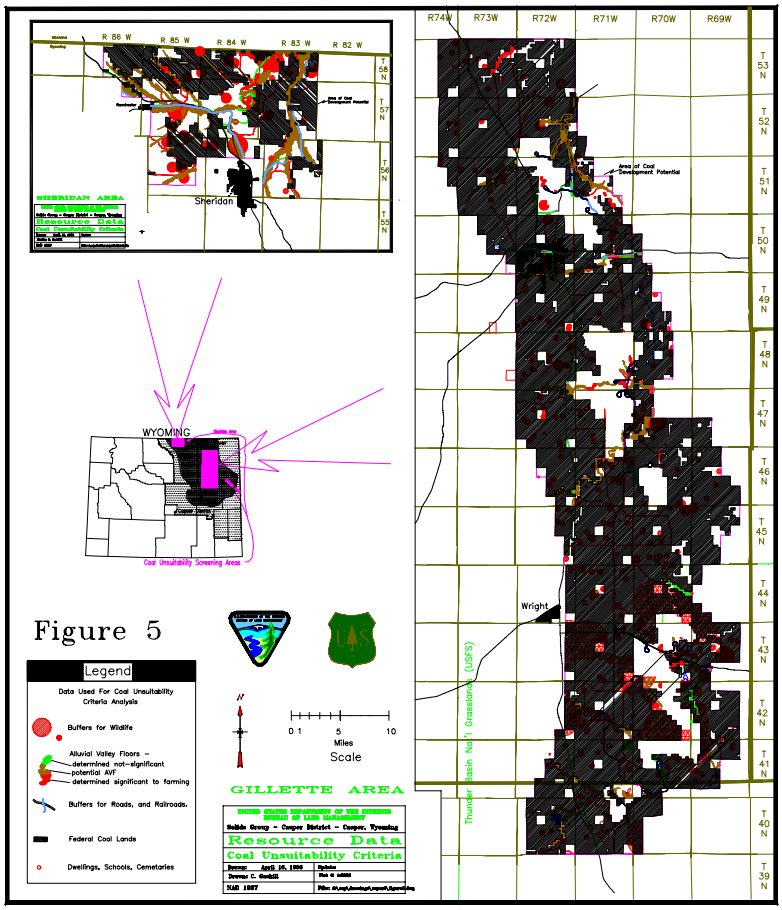
Findings. Thunder Basin National Grassland. The Thunder Basin National Grassland is not a proclaimed National Forest.

Bureau of Land Management-administered Lands. There are federal lands located around Gillette, Sheridan, and Wright that qualify for Criterion #1.

Recommendations. Use the buffers identified in the 1985 Buffalo RMP and exclude leasing from within these buffers except the Gillette buffer. The buffers will be larger than the incorporation boundary. The no-lease buffer was developed in conjunction with the multiple use analysis. Under the current management plan this buffer is 1 mile larger than the city planning buffer. For the Gillette buffer, there will be limited leasing only to those mines currently holding leases. This procedure is currently outlined in the Buffalo RMP.

Criterion #2 - Rights-of-way and Easements

(b)(1) Criterion Number 2. Federal lands that are within rights-of-way or easements or within


R 86 W
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Area of Coal Development Potential
Sheridan
SHERIDAN AREA
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Sheridan Area
Casper Area
Coal Unsuitability Screening Area
Legend
Data Used For Coal Unsuitability Criteria Analysis
Buffers for Wildlife
Alluvial Valley Floors –
determined not-significant
potential AVF
determined significant to farming
Buffers for Roads, and Railroads.
Federal Coal Lands
Dwellings, Schools, Cemeteries
0 1 5 10
Miles
Scale
GILLETTE AREA
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Resource Data
Coal Unsuitability Criteria
NAD 1927
R74W
R73W
R72W
R71W
R70W
R69W
T 53 N
T 52 N
T 51 N
T 50 N
T 49 N
T 48 N
T 47 N
T 46 N
T 45 N
T 44 N
T 43 N
T 42 N
T 41 N
T 40 N
T 39 N
Wright
Thunder Basin Nat'l Grasslands (USFS)

Figure 5

surface leases for residential, commercial, industrial, or other public purposes, on federally owned surface shall be considered unsuitable.

(2) 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.

(3) 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.

Findings. **Thunder Basin National Grassland.** There are two major rights-of-way which lie within the Thunder Basin National Grassland. The Burlington-Northern Railroad crosses the coal development potential area for approximately 27 miles. Approximately 22 miles of rail cross federal surface. The average right-of-way width for the railroad is 400 feet. The Tri-County 230 KV transmission line right-of-way also crosses the review area. It parallels the Burlington-Northern railroad in the northern one-third of the review area for approximately 12 miles. It also parallels the railroad for a short distance near the active Antelope Mine.

Two state highway rights-of-way cross approximately 4.4 miles of federal surface. Wyoming Highway 450 crosses about 3.3 miles and Wyoming Highway 59 crosses about 1.1 miles. Several county road rights-of-way encounter public surface and cross approximately 29 miles.

Several other minor rights-of-way such as pipelines or small power transmission lines occur sporadically within the study area.

Bureau of Land Management-administered Lands. In the Gillette coal development potential area the following rights-of-ways have been issued:

2 rights-of-way for railroads	< ½ mile
25 REA electric line rights-of-way	
17 gas pipeline rights-of-way	
7 oil pipeline rights-of-way	
27 rights-of-way for road access	
4 rights-of-way for state and county roads	2.2 miles = county roads

	200 feet for I-90.
5 rights-of-way for telephone lines	
4 rights-of-ways for sites of various kinds	

In the Sheridan coal development potential area there are several rights-of-ways which have been issued. They include:

1 railroad right of way	< ¼ mile
1 right of way for I-90	.6 mile
2 rights-of-way for telephone lines	
1 right-of-way for a water pipeline	
1 right-of-way for a ditch	
1 right-of-way for a REA electric line	

Recommendations. Thunder Basin National Grassland. Determine that exceptions IV and V apply to the minor rights-of-way and either move the rights-of-way, get permission to use the right-of-way or attach appropriate stipulations to the lease or mining permit to allow for mining in or around the right-of-way. This also applies to the 230K transmission line in areas not covered below.

Determine that the north-south railroad right-of-way is unsuitable for further consideration for mining. Determine the 230K transmission is unsuitable where it parallels and is adjacent to the railroad right-of-way. Determine that Wyoming 450 is unsuitable east of the intersection with the main north-south railroad right-of-way. This is based on the fact that Wyoming 450 is a major public highway and two rail-loops, which service the Black Thunder Mine and Jacobs Ranch Mine, parallel it.

Bureau of Land Management-administered Lands. In both the Gillette and Sheridan areas, determine that the I-90 right-of-way is unsuitable for further consideration for mining. Determine that rights-of-way for railroads (not rail loops) on federal surface unsuitable. Apply Exceptions IV and V for state highways and other smaller rights-of-way suitable and apply stipulations as necessary at the time of leasing.

Criterion #3 - Buffer Zones for Rights-of-way, Communities, and Buildings

(c)(1) Criterion Number 3. The terms used in this criterion have the meaning set out in the Office of Surface Mining Reclamation and Enforcement regulations at Chapter VII of Title 30 of the Code of Federal Regulations. 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.

(2) 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 within 100 feet of a public road will be protected.

(iv) For which owners of occupied dwellings have given written permission to mine within 300 feet of their buildings.

(3) 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.

Findings. Thunder Basin National Grasslands. There are no cemeteries, public buildings, schools, churches, community or institutional buildings, or public parks within the Grassland review area.

Wyoming 59 crosses the western portion of the Grasslands review area in a southeast/northwest direction for approximately 14 miles. The highway crosses approximately 12 miles of federal lands having coal development potential. Wyoming 59 has an average right-of-way width of 200 feet. The corridor for Wyoming 59, including a 100-foot buffer on either side of the right-of-way, will affect approximately 800 acres containing approximately 98 million tons of coal.

Wyoming 450 crosses the northern corner of the Grasslands review area in an east/west direction over a distance of approximately 16 miles. Approximately 12 miles overlie federal lands. Wyoming 450 from Wyoming 59 to a point just east of the existing Black Thunder and Jacobs Ranch mines was reconstructed and upgraded to state standards in its current location to better serve as access for the coal mining industry and is classified as a secondary Wyoming state highway. Portions of the right-of-way for Wyoming 450 are already under lease for the Black Thunder and Jacobs Ranch mines. Current plans call for relocation in the future. Wyoming 450 and its buffer affect approximately 750 acres of federal lands containing approximately 92 million tons of coal.

Approximately 63 miles of county roads cross the Grassland review area and federal lands. The average right-of-way is 75 feet. County roads and buffer areas are underlain by approximately 233 million tons of coal.

The Burlington Northern rail line crosses approximately 32 miles of federal lands. About 10 miles of rail loops serving the mines also cross federal lands.

There are 12 ranch headquarters within the study boundary. Eleven of the ranches are privately owned. One is owned by Peabody Coal Company and would not qualify under this criteria. Buffers around these affect about 72 acres.

Bureau of Land Management-administered Lands. For the Sheridan area, I-90 crosses the coal development potential (CDP) area for approximately 33 miles. It crosses

approximately 4.25 miles of federal lands and affects about 300 acres with its buffer. Wyoming 338 and 345 and Federal Highway 14 cross the CDP area for approximately 30 miles. These highways have a right-of-way width of 150 feet over federal lands for a distance of 5 miles affecting 303 acres. Numerous county roads cross through the CDP area over approximately 74 miles. The county roads extend over federal lands for a distance of 27 miles and have an average right of way of 75 feet affecting 1145 acres.

There are approximately 25 occupied dwellings in the coal development potential area on Federal lands. These consist mainly of ranch houses. There are no schools and no cemeteries in the area.

For the Gillette area, I-90 crosses the area over a distance of 16 miles. It has a right-of-way of 250 feet. Approximately 13 miles of I-90 crosses federal lands affecting 1,100 acres.

Approximately 122 miles of state and federal highways cross the CDP area. The right-of way is 150 feet. Approximately 92 miles cross federal lands affecting approximately 5,575 acres.

Several county highways run through the area for a distance of 272 miles. They have an average right-of-way of 75 feet. Approximately 218 miles cross federal lands affecting 9,250 acres.

There are about 150 occupied dwellings in the coal development area on federal lands. There is one school, one cemetery, and no public buildings in the area on federal lands. The school is a one-room school located in a remote location. The cemetery is a small rural cemetery.

Recommendations. Thunder Basin National Grasslands. Determine that Wyoming 450 east of the intersection with the north-south main railroad trunk line be determined unsuitable for mining leaving this area as a transportation corridor for rail servicing the Black Thunder and Jacobs Ranch mines and for Wyoming 450. Determine that exception (ii) or (iii) above will be applicable to state highways and county roads and defer a decision at this time making the assumption that the roads can be moved in the future. Determine that exception (iv) will apply to occupied dwellings and defer a decision at this time.

This recommendation changes the previous determination concerning Wyoming 59 and 450. Previously Wyoming 59 was considered unsuitable and Wyoming 450 suitable.

Bureau of Land Management-administered Lands. For both the Sheridan and Gillette areas, determine that I-90 is unsuitable for mining. Determine that exceptions (ii) and (iii) will be applicable to all state, other federal highways, and county roads at a later time and defer a decision until such time leasing occurs. Determine that exceptions (iv) will apply to occupied dwellings at a later time and defer a decision until leasing occurs. Determine

that cemeteries and the 100-foot buffer is unsuitable for mining. Determine exceptions (iii) and (iv) could apply, and a decision will be deferred until a later date when the mining is approaching the school.

Criterion #4 - Wilderness Study Areas

(d)(1) 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.

(2) 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.

Findings. **Thunder Basin National Grasslands.** None of the lands involved in the review are within a wilderness study area.

Bureau of Land Management-administered Lands. None of the lands involved in the review are within a wilderness study area.

Recommendations. Determine lands are available for further consideration.

Criterion #5 - Scenic Areas

(e)(1) 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.

(2) Exception. 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.

(3) 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.

Findings. **Thunder Basin National Grasslands.** None of the lands on the Thunder Basin National Grassland meet the scenic criteria as defined above.

Bureau of Land Management-administered Lands. There are no lands within the study area which meet the scenic lands criteria as outlined above.

Recommendations. Determine all lands are available for further consideration.

Criterion #6 - Land Used for Scientific Study

(f)(1) 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.

(2) 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.

Findings. **Thunder Basin National Grassland.** There are two sites on the National Grasslands within the review area that are being used for scientific study. The vegetative monitoring studies on one site (Sec. 1, T. 41 N., R. 71 W.; 640 acres) have been conducted by the University of Wyoming since 1936. The studies on the other site (NW¼NW¼, Sec. 30, T. 42 N., R. 69 W.) have been conducted by Forest Service personnel since 1962. This site is monitoring vegetation for range condition evaluations and is already within an existing coal lease and does not qualify.

There are also small additional scientific study areas (less than one acre tracts - enclosures) being used to gauge reclamation success associated with specific existing or proposed mines. These small areas are within existing leases and do not qualify. Five enclosures that provide specialized wildlife habitat are also in the review area. No scientific studies are being conducted on these five sites.

Bureau of Land Management-administered Lands. There is one site located south of Gillette. The Hoe Creek site is located in T. 47 N., R. 72 W., sec. 7, W½/SW. This site was used to study the feasibility of coal gasification by burning the coal. The coal under the lands will be detrimentally affected by the process and will mostly be burned. The site is presently being reclaimed.

Recommendations. **Thunder Basin National Grassland.** Determine the NE¼ of Section 1, T. 41 N., R. 71 W. of the University of Wyoming site is suitable. Defer a decision on the remainder of the site until leasing.

Bureau of Land Management-administered Lands. Determine the Hoe Creek site located in Section 7, T. 47 N., R. 72 W. is suitable.

Criterion #7 - Cultural Resources

(g)(1) Criterion Number 7. All publicly or privately owned places which are included in the National Register of Historic Places shall be considered unsuitable. This shall include any areas that the surface management agency determines, after consultation with the Advisory Council on Historic Preservation and the State Historic Preservation Officer, are necessary to protect the inherent values of the property that made it eligible for listing in the National Register.

(2) Exceptions. All or certain stipulated methods of coal mining may be allowed if, after consultation with the Advisory Council on Historic Preservation and the State Historic Preservation Officer, they are approved by the surface management agency, and, where appropriate, the State or local agency with jurisdiction over the historic site.

(3) 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.

Findings. Thunder Basin National Grasslands. There are no cultural sites within the study area that are listed on the National Register of Historic Places.

Bureau of Land Management-administered Lands. There are no cultural sites within the study area that are currently listed on the National Register of Historic Places.

Recommendations. Thunder Basin National Grasslands. Continue using the standard "archeological stipulation" on all new coal leases.

Bureau of Land Management-administered Lands. Continue using the standard "archeological stipulation" on all new coal leases.

Standard Archeological Stipulation for Cultural Resources

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

(2) The lessee shall protect all cultural resource properties within the lease area from lease-related activities until the cultural resource mitigation measures can be implemented as part of approved mining and reclamation or exploration plan.

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

(4) If cultural resources are discovered during operations under this lease, the lessee shall immediately bring them to the attention of the Assistant Director or Authorized Officer, or

the Authorized Officer of the surface managing agency, if the Assistant Director is not available. The lessee shall not disturb such resources except as may be subsequently authorized by the Assistant Director or Authorized Officer. Within two working days of notification, the Assistant Director or Authorized Officer will evaluate or have evaluated any cultural resources discovered and will determine if any action may be required to protect or preserve such discoveries. The cost of data recovery for cultural resources discovered during lease operations shall be borne by the surface managing agency unless otherwise specified by the Authorized Officer of the BLM or of the surface managing agency, if different.

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

Criterion #8 - Natural Areas

(h)(1) Criterion Number 8. Federal lands designated as natural areas or as National Natural Landmarks shall be considered unsuitable.

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

(i) The use of appropriate stipulated mining technology will result in no significant adverse impact to the area or site; or

(ii) The mining of the coal resource under appropriate stipulations will enhance information recovery (e.g., paleontological sites).

(3) 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.

Findings. Thunder Basin National Grasslands. None of the lands involved in the review area are designated as natural areas or as National Natural Landmarks at this time. There are no unsuitable findings.

Bureau of Land Management-administered Lands. None of the lands involved in the review area are designated as natural areas or as National Natural Landmarks. There are no unsuitable findings.

Recommendations. No lands should be considered unsuitable under this criterion at this time.

Criterion #9 - Critical Habitat for Threatened or Endangered Plant and Animal Species

(i)(1) Criterion Number 9. Federally designated critical habitat for listed threatened or endangered plant and animal species, and habitat proposed to be designated as critical for listed threatened or endangered plant and animal species or species proposed for listing, 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.

(2) 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.

(3) 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.

Findings. **Thunder Basin National Grasslands.** There is no federally designated critical habitat for threatened or endangered plant or animal species within the review area. Likewise, the FS and FWS have not documented the presence of habitat to be

of essential value for threatened and endangered species. Therefore, there are no unsuitable findings.

Bureau of Land Management-administered Lands. There is no federally designated critical habitat for threatened of endangered plant or animal species within the review area. Likewise the BLM and FWS have not documented the presence of habitat to be essential for threatened and endangered species.

Recommendations. All lands in the review area are available for further consideration.

Criterion #10 - State Listed Threatened or Endangered Species

(j)(1) 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.

(2) 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.

(3) 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.

Findings. T**hunder Basin National Grasslands.** The State of Wyoming does not maintain a state list of threatened and endangered species of plants or animals. Therefore, this criterion does not apply to the area.

Bureau of Land Management-administered Lands. The state of Wyoming does not maintain a state list of threatened and endangered species of plants or animals. Therefore this criterion does not apply to the review area.

Recommendations. All lands within the review are available for further consideration.

Criterion #11 - Bald or Golden Eagle

(k)(1) 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.

(2) 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.

(3) 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.

Findings. Thunder Basin National Grasslands. Within the boundary of the review area, there are slightly over 100 golden eagle nests that have been active during recent years. This number fluctuates from year to year. Approximately 20 of the nests are located on lands already under lease and scheduled for surface mining activities in the future.

Nests have been successfully moved off the lease area, and the eagle pairs have adopted many of the new nest sites. It is quite possible that additional nests may be moved if state and federal permits are acquired.

Biological buffer zones will be established around each of the existing nest at a later date. These buffers will be determined in consultation with the FWS.

There are three bald eagle nest sites which occur within the boundary of the review area. None of these nest sites have successfully hatched or fledged young. None of these nests have been active in several years.

Bureau of Land Management-administered Lands. Within the boundary of the review area, there are approximately 73 golden eagle nest sites that have been active during recent years. Nine of the nests are located on lands already under lease for surface mining activities, and 13 nests are located on state or private coal areas or city buffer zones and are not applicable to unsuitability review.

There is one bald eagle nest site in the Sheridan review area located on private land.

Eagle nest location and activity changes from year to year. An area that is classified as unsuitable today may not be so in the future and vice-versa. This is due to nest activity, location of nests, location of new nests, elimination of old nests by natural causes (for example, lightening, wind, etc.) and nest abandonment.

Recommendations. Determine that exceptions (i), (ii), and (iii) can apply, and defer a decision till the time of leasing. Re-evaluate this criteria prior to lease issuance on a case-specific environmental analysis. Specific buffer zones will be drawn for those nests that are on lands which go to lease with consultation with the FWS.

This removes any areas considered unsuitable in the previous assessment and places them under a deferred decision status. They will be analyzed on a case-by-case basis at the time a lease action is undertaken for the areas involved.

Criterion #12 - Bald and Golden Eagle Roost and Concentration Areas

(l)(1) Criterion Number 12. Bald and golden eagle roost and concentration areas on Federal lands used during migration and wintering shall be considered unsuitable.

(2) 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.

(3) 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.

Findings. Thunder Basin National Grasslands. There are 16 bald and golden eagle roosts located inside the review area boundary as well as 3 less than 1 mile from the review area.

Bureau of Land Management-administered Lands. There is one bald eagle roost located in the review area.

Recommendations. Thunder Basin National Grasslands. Determine that exception (2) may apply and defer a decision at this time. Re-evaluate this criteria prior to lease issuance during a case-specific environmental analysis. Biological buffer zones will be established around each existing nest at a later date. These buffers will be determined in consultation with the FWS.

Bureau of Land Management-administered Lands. Determine that exception (2) may apply and defer a decision at this time. Re-evaluate this criteria prior to lease issuance during a case-specific environmental analysis. A biologic buffer zone for this roost site will be designated in consultation with the FWS should this roost area be considered for a specific lease.

This removes any areas considered unsuitable in the previous assessment and places them under a deferred decision status. They will be analyzed on a case-by-case basis at the time a lease action is undertaken for the areas involved.

Criterion #13 - Falcon Nesting Site(s) and Buffer Zone(s)

(m)(1) 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.

(2) 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.

(3) 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.

Findings. **Thunder Basin National Grasslands.** There are three known prairie falcon nest sites within the review area, and one nest site within less than ½ mile of the review area.

Bureau of Land Management-administered Lands. There are three prairie falcon nesting sites in the review area.

Recommendations. **Thunder Basin National Grasslands.** Determine that exception (2) will apply and defer a final determination. Re-evaluate this criteria prior to lease issuance during a case-specific environmental analysis.

Bureau of Land Management-administered Lands. Determine that exception (2) will apply and defer a final determination. Re-evaluate this criteria prior to lease issuance during a case-specific environmental analysis. A biologic buffer zone will be designated in consultation with the FWS should these nest sites be included in areas designated for a specific coal lease.

This removes any areas considered unsuitable in the previous assessment and places them under a deferred decision status. They will be analyzed on a case-by-case basis at the time a lease action is undertaken for the areas involved.

Criterion #14 - Habitat for Migratory Bird Species

(n)(1) 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.

(2) 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.

(3) 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.

Findings. Thunder Basin National Grasslands. There are three bald eagle nest sites which occur within the boundary of the review area. None of these nest sites have successfully hatched or fledged young. None of these nests have been active in several years. There are 16 bald eagle roosts located inside the review area boundary as well as three less than 1 mile from the review area.

Within the boundary of the review area, there are slightly over 100 golden eagle nests that have been active during recent years. Twenty of the nests are located on lands already under lease and scheduled for surface mining activities in the future.

There are three known prairie falcon nest sites within the review area, and one nest site within less than ½ mile of the review area.

There are 131 known ferruginous hawk nests within the review area. Many of these nests are alternate nests, and activity will need to be determined during the leasing analysis.

There are two known Richardson's merlin nests within the review area.

There are 2,950 known acres of mountain plover habitat within the review area. Of this acreage, 665 are presently on existing leases.

Habitat exists for all of the migratory birds of high federal interest within the review area. Many of these species will also be evaluated through a biological evaluation of Region 2 sensitive wildlife species for this area.

Bureau of Land Management-administered Lands. Within the boundary of the review area there are 73 golden eagle nest sites and 1 bald eagle nest site. Of this, 22 nest sites and the bald eagle nest site are located on lands previously leased for surface mining location or on state and private coal areas.

There are three prairie falcon nest sites.

There are 82 ferruginous hawk nest sites in the review area that have been active during recent years. Four nest sites are located on lands presently under lease for coal mining; 10 nests occur on state or private mineral lands not considered for unsuitability review. It should be emphasized that many ferruginous hawk nest are alternate nest sites of the same pair due to the nature of the species' nesting habits (that is, the total number of nest sites do not reflect the actual ferruginous hawk nesting population).

There are three known burrowing owl nest locations in the review area. In the Sheridan review area there is a nesting population of Lewis woodpecker in which biologic buffer zones have previously been delineated. Each of the nest locations are plotted on the review area location map and are for graphic purposes only.

Recommendations. Thunder Basin National Grasslands. Determine that exception (2) will apply and defer a final determination. Re-evaluate this criteria prior to lease issuance during a case-specific environmental analysis.

Bureau of Land Management-administered Lands. Determine that exception (2) will apply and defer a final determination. Re-evaluate this criteria prior to lease issuance during a case-specific environmental analysis. Should specific lease areas include any of the above species, a biologic buffer zone will be designated for each nesting area, in consultation with the FWS.

This removes any areas considered unsuitable in the previous assessment and places them under a deferred decision status. They will be analyzed on a case-by-case basis at the time a lease action is undertaken for the areas involved.

Criterion #15 - Fish and Wildlife Habitat for Resident Species

(o)(1) Criterion Number 15. Federal lands which the surface management agency and the state jointly agree are for resident species of fish, wildlife and plants 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;

(iii) Migration corridors for elk; and

(iv) Extremes of range for plant species;

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.

(2) 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.

Findings. Thunder Basin National Grasslands. Fourteen sage grouse leks were identified within the review area. Three of these leks are presently within lease boundaries. Mitigation plans for protecting these three leks and re-establishing the dancing and strutting grounds have been developed in the mine plans.

Bureau of Land Management-administered Lands. There are 21 sage grouse breeding areas in the review area. Of the total leks, five are on areas presently leased for coal mining and three are on state or private or city buffer zones unavailable for further consideration.

There are nine sharptailed grouse breeding areas in the review area. Of these nine leks, five are on state or private minerals or presently under lease for coal mining and unavailable for further consideration.

There is no crucial big game habitat in the review area.

Recommendations. Thunder Basin National Grasslands. Determine that exception (2) will apply and defer a final determination. Re-evaluate this criteria prior to lease issuance during a case-specific environmental analysis.

Bureau of Land Management-administered Lands. Determine that exception (2) will apply and defer a final determination. Re-evaluate this criteria prior to lease issuance during a case-specific environmental analysis. Specific buffer zones will be drawn in consultation with the Wyoming Game and Fish Department (WGFD) for grouse breeding and nesting areas should any of these sites be considered for additional leasing.

This removes any areas considered unsuitable in the previous assessment and places them under a deferred decision status. They will be analyzed on a case-by-case basis at the time a lease action is undertaken for the areas involved.

Criterion #16 - Floodplains

(p)(1) 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.

(2) 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.

Findings. Thunder Basin National Grasslands. The FS has determined that the identified floodplains could potentially be mined. Therefore, all lands within the review area are available for further consideration.

Bureau of Land Management-administered Lands. The BLM has determined that the identified floodplains could potentially be mined. Therefore, all lands within the review area are available for further consideration.

Recommendations. Thunder Basin National Grasslands. All lands should be available for mining through the use of site-specific stipulations and resource protection

safeguards to be developed through the site-specific analysis and mining and reclamation planning process.

Bureau of Land Management-administered Lands. All lands should be available for mining through the use of site-specific stipulations and resource protection safeguards to be developed through the site-specific analysis and mining and reclamation planning process.

Criterion #17 - Municipal Watersheds

(q)(1) Criterion Number 17. Federal lands which have been committed by the surface management agency to use as municipal watersheds shall be considered unsuitable.

(2) 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.

(3) 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.

Findings. **Thunder Basin National Grasslands.** There are no designated municipal watersheds involved within the review area.

Bureau of Land Management-administered Lands. There are no designated municipal watersheds involved within the review area.

Recommendations. **Thunder Basin National Grasslands.** All lands should be available for further consideration.

Bureau of Land Management-administered Lands. All lands should be available for further consideration.

Criterion #18 - National Resource Waters

(r)(1) 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.

(2) 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.

(3) 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.

Findings. **Thunder Basin National Grasslands.** There are no designated national

resource waters located within the review area boundary.

Bureau of Land Management-administered Lands. There are no designated national resource waters located within the review area boundary.

Recommendations. Thunder Basin National Grasslands. All lands are available for further consideration.

Bureau of Land Management-administered Lands. All lands are available for further consideration.

Criterion #19 - Alluvial Valley Floors (AVFs)

(s)(1) 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.

(2) 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.

Findings. Thunder Basin National Grasslands. The FS, in conjunction with the Land Quality Division of the Wyoming Department of Environmental Quality (DEQ), have identified approximately 10,000 acres of lands containing AVFs or potential AVFs within the review area. This involves portions of Sand Creek, Antelope Creek, School Creek, Porcupine Creek, Spring Creek, Little Thunder Creek, Black Thunder Creek, and Logan Draw.

The study identified approximately 8,000 acres of potential AVFs, approximately 400 acres already determined as significant to farming (agriculture), and approximately 1,600 acres determined to be not significant to farming.

Bureau of Land Management-administered Lands. Based on studies by the BLM and the Land Quality Division of the Wyoming DEQ there are approximately 36,100 acres of AVFs which have been identified. This includes approximately 31,100 acres of potential AVFs, approximately 4,000 acres of AVFs significant to farming, and approximately 1,000 acres not significant to farming.

Recommendations. Thunder Basin National Grasslands. Consider approximately 400 acres as unsuitable for further consideration for mining because the areas have been determined to contain AVFs significant to farming. Defer a decision on the remaining areas until site-specific leasing becomes involved. Re-evaluate site specific AVFs at time

of leasing with final consultation with Wyoming DEQ before any leasing or surface-disturbing activities associated with the potential AVFs.

Bureau of Land Management-administered Lands. Consider approximately 4,000 acres as unsuitable for further consideration for mining because the areas have been determined to contain AVFs significant to farming. Defer a decision on the remaining areas until site-specific leasing becomes involved. Re-evaluate site specific AVFS at time of leasing with final consultation with Wyoming DEQ before any leasing or surface-disturbing activities associated with the potential AVFs.

Criterion #20 - State or Indian Tribe Proposed Criteria

(t)(1) Criterion Number 20. Federal lands in a state to which is applicable a criterion (i) proposed by the state or Indian tribe located in the planning area, and (ii) adopted by rulemaking by the Secretary, shall be considered unsuitable.

(2) 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 or affected Indian tribe, 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.

(3) 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.

Findings. Thunder Basin National Grasslands. There are no criterion proposed by state or Indian tribes that have been approved by the Secretary of the Interior.

Bureau of Land Management-administered Lands. There are no criterion proposed by state or Indian tribes that have been approved by the Secretary of the Interior.

Recommendations. Thunder Basin National Grasslands. Determine all lands are available for further consideration.

Bureau of Land Management-administered Lands. Determine all lands are available for further consideration.

Results of Multiple-use Analysis

Current multiple-use conflicts consist of multiple mineral leasing (coal versus oil and gas) and municipal/residential development. Both problems were recognized in the 1985 RMP and resolutions were adopted.

Oil and Gas Conflicts

The current RMP planning decisions are as follows.

1. On existing coal leases with approved mining and reclamation plans, authorize oil and gas drilling and production only where such activities would not conflict with coal mining. In cases where oil and gas conflicts cannot be resolved, oil and gas drilling and production will be deferred.

2. Defer coal leasing in producing oil and gas fields unless or until coal development will not interfere with the economic recovery of the oil and gas resource, as determined case by case by the BLM.

As these decisions were being carried out, problems and questions arose. Situations also arose which were not evaluated. Some of these are:

1. Why defer coal leasing in a producing oil field and not defer oil and gas leasing in a producing coal mine?

   Result: A policy was initiated about 1990 to defer all oil and gas leasing in coal leases and permit boundaries. This policy was loosened and evaluations began for each oil and gas lease to determine if there would be a parcel-specific conflict with coal development. In many cases it was determined there would be no conflict, and these parcels were allowed to go to lease. As time went on, interested oil and gas operators called to see if they could lease specific parcels within coal leases. A team was set up to come up with solutions to this problem. This led to the establishment of a stipulation to be put on oil and gas leases within existing coal leases. The stipulation is intended to protect the valid existing rights for coal development and operations on, over, and underlying a lease. The current stipulation is as follows:

   > **Current oil and gas stipulation:** (1) Surface occupancy or use will be restricted or prohibited within areas of conflict with ongoing coal mining activities. An acceptable plan for mitigation must be negotiated between the oil and gas and coal lessees, and approved by the authorized officer; (2) """affected area""" (3) protecting the valid existing rights for coal development and operations on, over and underlying this lease.

   Development of the current stipulation was considered maintenance for the RMP because it did not change the intent of the original decisions. It does however, clarify management procedures of the mineral estates to meet the intent of the RMP.

Municipal/Residential Conflicts

The community/municipal/residential multiple-use conflict was addressed in the 1985 RMP by applying buffers around the current municipal planning boundaries. The buffer size is 3 miles larger than the planning boundary. The 1985 management decision for communities is as follows.

> **Conflict:** Coal development within the boundaries of cities and towns or within local planning boundaries would result in unavoidable local adverse social and economic impacts.
>
> **Decision:** Community buffers will be defined for the towns of Gillette, Sheridan, Buffalo and Wright. These buffers encompass about 55,000 acres of uncommitted Federal coal lands containing about 5.3 billion tons of coal. These buffers are unavailable for mining.

The buffer around Gillette had many active coal leases in it when the buffer was formed. These mining operations were allowed to continue. Since the buffer was initiated a coal mine has requested a lease modification to pick up a small portion of coal so that it would not be left behind, and another mine requested some coal for similar purposes. It was determined that a change in the handling of the Gillette buffer would be necessary. An amendment to the plan now allows for leasing actions adjacent to existing mines. These leasing actions cannot extend more than 1 mile beyond existing coal lease boundaries.

Coal Bed Methane Conflicts

This is specifically the drilling for and the extracting of coal bed methane adjacent to the producing mines. The problem is currently occurring in the Gillette area and could spread to the Sheridan area. This conflict began in the early 1990s and continues to grow.

Coal bed methane extraction involves drilling into the coal and pumping water from the coal in an attempt to lower the hydrostatic head on the coal. This lower pressure will cause the release of gas which is adsorbed onto the coal. The gas production begins slowly and generally increases as the pressure drops over the years.

There are several problems that arise from coal bed methane drilling. One problem is from the drilling of the coal bed methane wells immediately in front of the active mining operations. Since it takes many years to produce the coal bed methane, the coal companies are hindered by the coalbed methane operators and either have to buy the oil and gas wells out at inflated prices or bypass the coal which is not in the federal interest. The legal rights to the mineral estate (either coal or oil and gas) rests in the time at which each lessee received the lease (first in time, first in right--FITFIR). If the coal company acquired the lease after the oil and gas company, the coal estate is in jeopardy and vice versa.

The second problem arises out of the fact that nearly all the coal in the Gillette area is under federal ownership. However, the oil and gas estate is only about 60% federal. This means a private concern can drill a well into federal coal and produce it, thus holding up federal coal production.

The third problem stems from the permitting and environmental side. The coal companies are operating under mining permits which were developed based on environmental effects that they themselves would cause. The environmental effects are compounded greatly by the coal bed methane development. This could change how the coal companies can mine in the future.

The BLM is currently issuing oil and gas leases under the stipulations mentioned above. The plan is to be able to mitigate the problems of the multiple mineral development.

Surface Owner Consultation

Section 714 of the Surface Mining Control and Reclamation Act (SMCRA) requires BLM to consult with certain "qualified" owners of "split-estate" lands (private surface ownership over federally owned coal) when surface mining of federal coal is being considered. This requirement is also expressed in 43 CFR 3461 which requires consultation during the planning process.

In this consultation process, qualified surface owners are asked to express their preference for or against surface mining of federal coal under their private surface estate. Expressions of a preference against surface mining, either by an individual or by a significant number of individuals, can result in federal coal land being unavailable for coal development. Such areas can still be considered for possible leasing because the owner's former consent or refusal to consent does not occur until later in the coal activity planning process.

This process was completed in two phases. Phase one included the Gillette coal development potential area. Phase two included the Sheridan coal development potential area. The letters for the Gillette area were sent out during December 1996. The Sheridan area letters were sent during August and November 1997.

Letters were sent by certified mail to 569 surface owners of record in Campbell, Converse, and Sheridan counties. The owners were asked to express their preference for or against mining. There were a number of owners who did not respond. The results are shown in table 3.

No attempt was made to distinguish qualified surface owners. This is because some of the landowners owned the land less than three years but will have owned the land three years or more when leasing takes place. Also, large landowners may have their primary

TABLE 3 SUMMARY OF SURFACE OWNER CONSULTATION						
Area	**Letters Sent**	**Letters Delivered**	**Responses Received**	**Number Respondin g "No"**	**Survey Acreage**	**Acreage Against Mining**
Gillette	421	402	224	197	602,400	124,360
Sheridan	148	139	93	46	73,200*	20,700 to 30,720*

*These figures are approximate and are based on an undifferentiated full section basis. That is, if a section contained federal coal all of the section was included in the acreage. Also, if a section received an "against" answer, the entire section was included in the figure. Errors can arise if the owner only owned a small portion of the section it would weight the number higher than it should. Since the same process was used for both total acres and against acres the ratio should remain about the same. The reason for the range of values in the "against mining" is because some sections had "favor mining" and "against mining" answers.

residence on the lands included in the survey but will not have their primary residence on the lands being leased in the future (for example, a 160-acre tract several miles from their primary residence).

Figure 6 illustrates the results of the surface owner consultation survey in map form. There is not much opposition to mining in the areas that are actively being mined in the Gillette area. The objections are quite a ways from the active areas or in areas having moderate to low development potential. In the Sheridan area there is a greater percentage of owners who do not favor mining. As can be seen on the figure, there is a cluster in the west and southeast of the Sheridan area who do not favor mining.

No area should be dropped from further consideration for leasing as a result of responses received from surface owners. However, before future tracts are delineated, surface owners will be contacted as to their preference for or against surface coal mining.

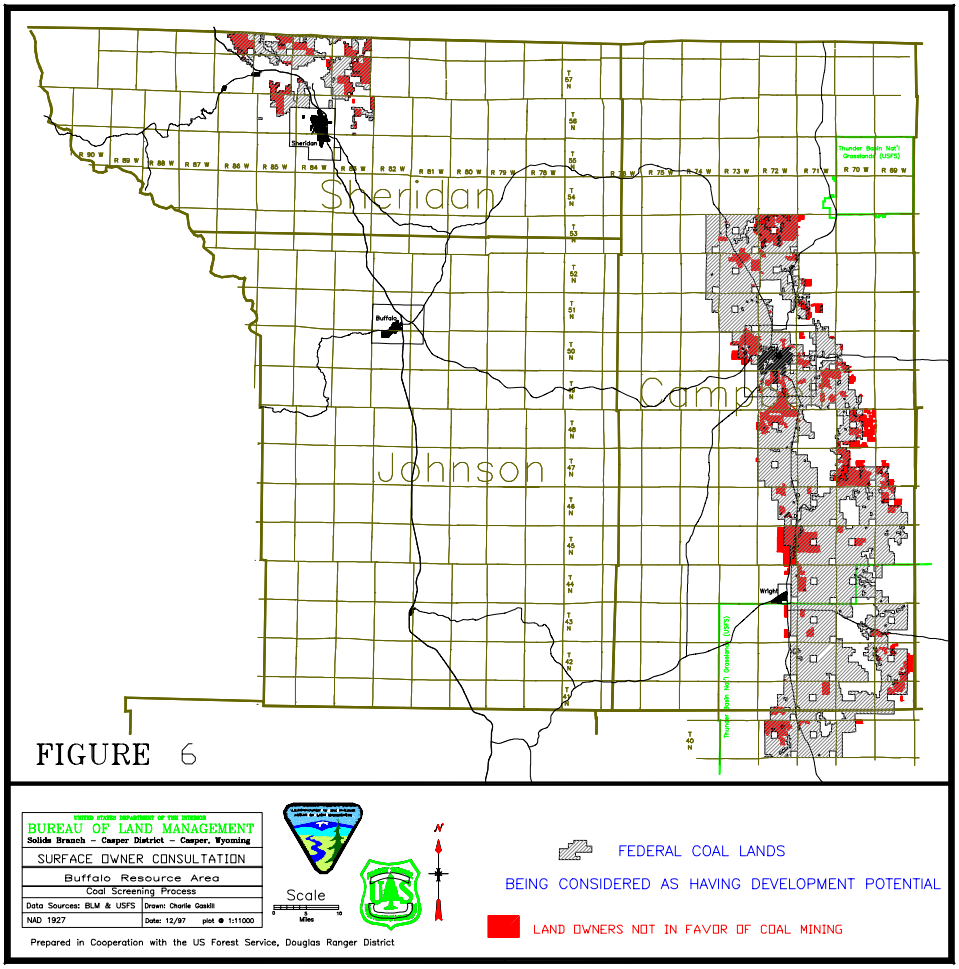

FIGURE 6

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Solids Branch – Casper District – Casper, Wyoming

SURFACE OWNER CONSULTATION

Buffalo Resource Area

Coal Screening Process

Data Sources: BLM & USFS	Drawn: Charlie Gaskill
NAD 1927	Date: 12/97 plot @ 1:11000

Scale
0 5 10
Miles

N

FEDERAL COAL LANDS
BEING CONSIDERED AS HAVING DEVELOPMENT POTENTIAL

LAND OWNERS NOT IN FAVOR OF COAL MINING

Prepared in Cooperation with the US Forest Service, Douglas Ranger District

APPENDIX E

Reasonable Foreseeable Development Scenario for Uranium

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MAPS

MAP 1: Uranium Occurrence Potential Map of the Buffalo Resource Area
MAP 2: Uranium Development Potential Map of the Buffalo Resource Area

INTRODUCTION

Uranium is mainly used to fuel nuclear power plants. In April 1997 there were 437 nuclear power plants in operation worldwide; about 25%, or 108 of these plants are in the United States. An additional 28 plants worldwide were under construction. The US produces about 7% of the world's uranium. Uranium demand is slightly more than double uranium production worldwide.

US Geological Survey geologist Dr. David Love discovered the first uranium occurrences in the Buffalo Resource Area (BRA) in October 1951 (Mrak 1958). The discovery was on the south flank of North Pumpkin Butte in Section 24, T. 44 N., R. 76 W. (Minobras 1976). The area is now part of the Pumpkin Buttes Uranium District (Harris 1985).

Two uranium districts have been identified in the BRA. The Pumpkin Buttes District is the larger of the two, about 940 square miles, and is located in southwest Campbell and southeast Johnson counties. Mining activity is presently occurring in the Pumpkin Buttes District. The Kaycee Uranium District is smaller, about 40 square miles, and is located in south-central Johnson County. Mining has not occurred in the Kaycee District since the early 1980s.

Uranium deposits in the Pumpkin Buttes District are primarily "roll-front" type deposits, mostly in Eocene-age Wasatch Formation sandstones. Uranium was precipitated from oxidized groundwaters at oxidation-reduction interfaces. Uranium in these deposits generally occurs as the mineral uraninite and coats sand grains. Ore-grade mineralization generally averages a few tenths of a percent uranium. Ore grades in small areas near the center of an orebody may be as high as a few percent uranium. Roll-front deposits are seldom more than about 15 feet wide and 10 feet thick but may extend for several hundred feet.

OCCURRENCE POTENTIAL FOR URANIUM MINERALIZATION

In the BRA, uranium occurrences have been documented in the Tensleep, Sundance, Fort Union, and Wasatch formations and in Precambrian crystalline rocks. Map 1 shows the potential for uranium occurrence in the BRA and is based on the Wyoming Geologic Map (Love and Christiansen 1985) and the Metallic and Industrial Minerals Map of Wyoming (Harris et al. 1985). The potential for uranium occurrence does not indicate that an economic uranium deposit exists, only the probability of finding anomalous uranium mineralization. The definition of high, moderate, and low potential for uranium occurrence are listed on map 1.

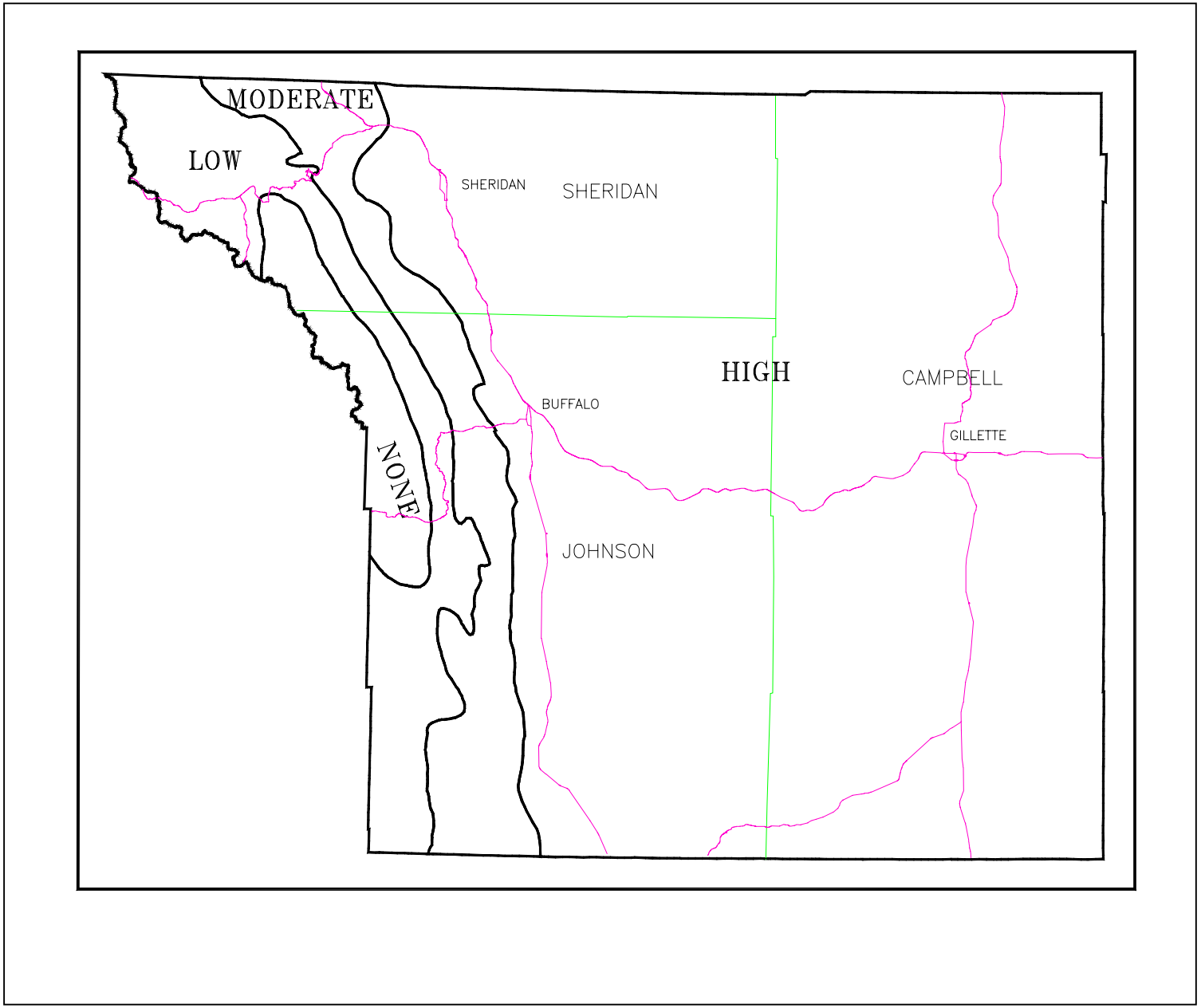
CURRENT AND ANTICIPATED URANIUM DEVELOPMENT ACTIVITY

Two *in situ,* leach-uranium mine fields are currently operating in the BRA. Three others are planned. All five mines are in the Pumpkin Buttes district. Mining activity is not currently planned for the Kaycee Uranium District. During 1995, 0.44 million pound of uranium oxide was produced from the BRA. In 1996 production increased to slightly more than 0.7 million pound. During the next five to ten years annual production from the BRA will probably range from 0.7 to 0.9 million pound of uranium (Miller 1997). Virtually all of the production will be from the Pumpkin Buttes District (Harris 1997). By comparison, statewide production will probably range from 5 to 15 million pounds (Miller 1997).

Currently worldwide production of uranium is approximately 70 million pounds per year; 6.3 million pounds are produced in the US.

Map 2 shows the development potential of the BRA. It is an estimate of future uranium development activity. The map is based on current and anticipated trends in the nuclear industry. The level of activity is measured by the number of drilling rigs used to explore and develop uranium ore deposits. Most of this drilling will be to support *in situ* mining activity. Most of the uranium drilling activity will occur in the Pumpkin Buttes District. Additional work is needed to accurately locate and evaluate uranium deposits in this area. Uranium exploration will probably occur, but it will not be extensive unless there is a considerable increase, or anticipated increase, in the price of uranium. This is not considered likely to occur.

OCCURRENCE POTENTIAL MAP



URANIUM OCCURRENCE POTENTIALS

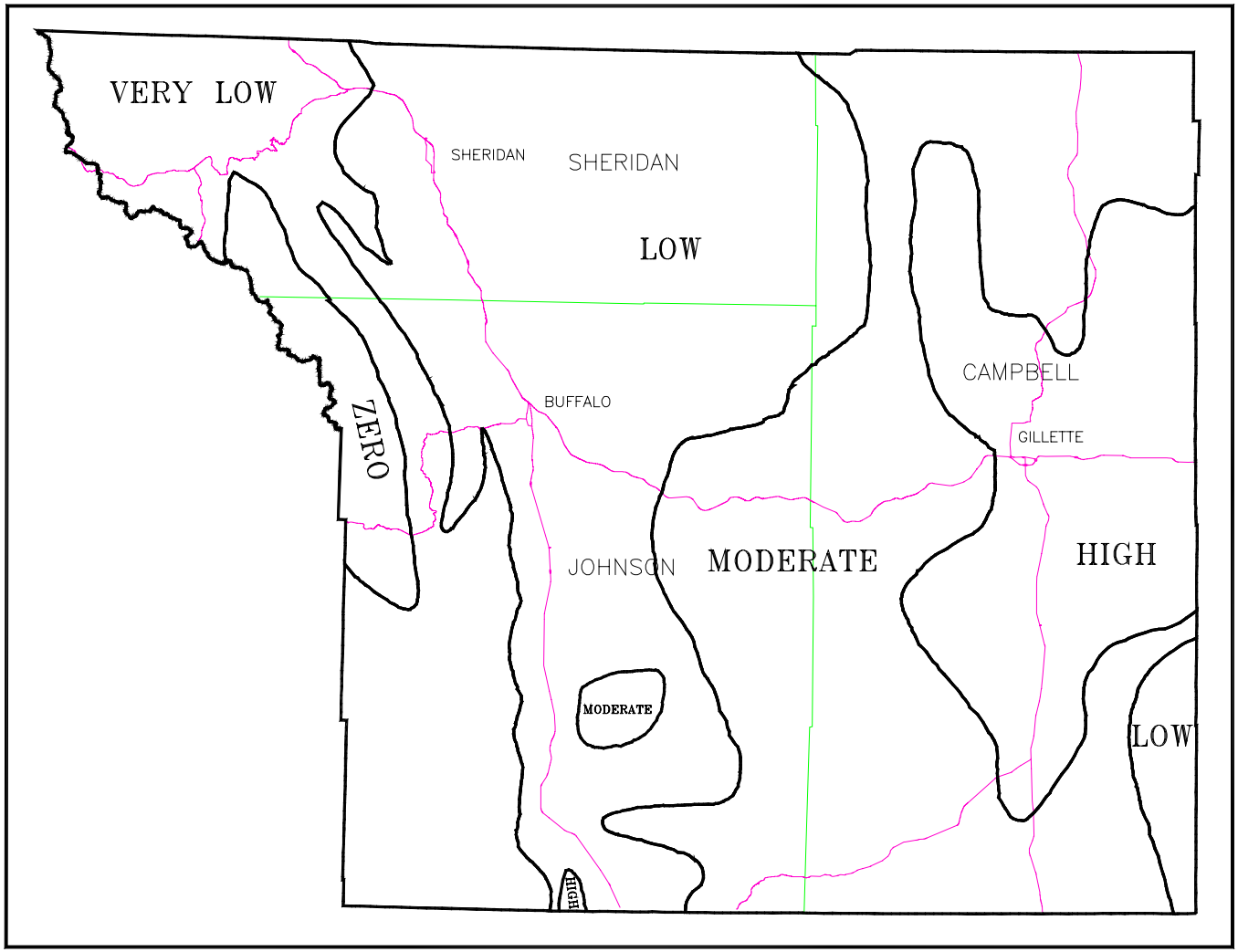
Low--No known, published record of verified, significant uranium occurrences. Geologic conditions do not appear to be adequate for large, mineable uranium deposits.

Moderate--Verified uranium occurrences are present, but no large or mineable deposits are known. Geologic conditions are present but not optimum for uranium deposits.

High--Many verified uranium occurrences are present and large, possibly mineable deposits, may exist.

Very High--Uranium mining area with current or past mining activity. Discovery of mineable deposits is probable.

DEVELOPMENT POTENTIAL MAP



URANIUM DEVELOPMENT POTENTIALS

Low--No active mining and little or no development drilling. Surface geologic investigations will probably occur. The average number of drill rigs working on a year-round basis during the next 10 to 15 years will be less than one.

High--No currently active mines. There may be a relatively small amount of mining activity in the next 10 to 15 years. Exploration and development drilling will probably occur. The average number of drill rigs operating annually will be less than two.

Very High--Active mining and development area. During the next 10 to 15 years mining is expected to continue. The average number of drill rigs operating annually may be as high as 50.

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APPENDIX F

Landownership Adjustment Strategy

of

Casper District

Bureau of Land Management

Proposed By: Land Exchange Team, Casper District 3/13/96

Approved By: /s/ Donald Hinrichsen 3/13/96
Don Hinrichsen, Casper District Manager Date

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INTRODUCTION

The Casper District Bureau of Land Management (BLM) made up of three resource areas: Buffalo, Newcastle and Platte River has the responsibility for management of some 2.9 million acres of public lands (federal surface and federal minerals), and approximately 8.5 million acres of federal minerals referred to as split-estate (private surface and federal minerals). Focusing primarily on the 2.9 million acres of public lands within this district, many are isolated, unaccessible, and scattered parcels that are intermingled with private, State and other federal lands managed by other agencies.

PURPOSE OF THE LAND ADJUSTMENT STRATEGY

The purpose of this land adjustment strategy is to provide general guidance to the land adjustment program for Casper District in order to accomplish plan objective of the resource areas. The strategy will be useful in guiding land exchange negotiations as well as other land adjustment actions with landowners and discussing the overall program with the public.

The strategy provides general direction for federal land adjustments and may be modified or amended as new information and/or opportunities become evident. The strategy does not make hard and fast decisions on land adjustment; it provides concepts. Specific land adjustment proposals will be analyzed using the NEPA process including public participation. Decisions to implement a specific proposal will be based on the specific NEPA analysis and finding that the proposal is in the public interest and consistent with the BLM plans, and applicable laws and regulations.

Goals

The overall goals of the Casper District BLM are:

1) to develop a landownership pattern that will provide better access, better management and protection to the public lands,
2) to identify and pursue appropriate disposal actions of public land to private individuals and/or for management by other federal or State agencies to help solve problems related to intermixed landownership patterns.
3) to implement and accomplish landownership adjustment in a timely, cost effective manner while continuing to streamline processes.

Objectives

These objectives will tier to resource area management plans (emphasis on land adjustment using exchanges including assembled land exchanges):

1) provide or improve public access and recreation use and opportunities by consolidating landownership pattern and acquiring easement through land adjustment.

2) reduce conflicting land management objectives of private landowners and BLM.

3) improve resource management of BLM public lands and other federal lands to meet planning direction and allow implementation of an ecosystem management approach.

4) acquire lands within critical wildlife and/or Areas of Critical Environmental Concern (ACEC), and riparian areas according to planning direction.

5) Improve cost affective management practices and cost efficiency of management objectives by reducing the administrative costs.

JUSTIFICATION FOR A LAND ADJUSTMENT PROGRAM

The intermingled landownership pattern of this district makes it especially difficult for both the BLM and the private landowners to achieve their often different management objectives. The BLM has multiple objectives endorsed by planning objectives while the private landowners primarily have revenue production objectives. The intermingled ownerships where BLM public lands are scattered, unmanageable and unaccessible leads to conflicts in meeting these different objectives and inhibits management effectiveness and efficiency for both the BLM and the private landowners. In striving to meet its planning objectives, Casper District will plan and use landownership adjustment to consolidated public lands into more manageable and accessible units to further benefit the public and to more effectively initiate and continue sound ecosystem management practices. The intent of landownership adjustment is not to increase the federal land estate, but to consolidate parcels into more efficient and manageable patterns.

The predominant issues and majority of comments from past and current scoping meetings and interviews for resource area planning documents were ones of access to and recreation potential on public lands. Another area of high interest in these meetings and through direct inquiries over the past several years from both adjoining landowners and the general public was the desire to acquire many of these isolated federal (public land) parcels. Also, with the onset of range reform and the uncertainty of grazing lease fees, landowners surrounding isolated, scattered parcels of public lands within their ranch units have voiced their growing sincere interest in purchasing these lands. These scattered, isolated public lands are both expensive and impossible to manage, and more efficiency would be gained while better serving the public by disposing of these parcels. For the Casper District, in order to initiate practices and make sound decisions base on effects to ecosystem units the land pattern must be adjusted. Currently, identified within this district, there are over 300,000 acres of scattered, isolated parcels of land identified within planning documents as available for possible disposal. The majority of the adjoining landowners, the grazing lessees, and the general public have expressed interest in purchasing these parcels. In exchange for many of these disposal parcels, lands or easements could be acquired through avenues such as "assembled land exchanges" defined simply as a type of exchange where several different federal and/or private parcels are combined together and exchanged in one or more transactions over time. The expense of conducting the exchange can be distributed among several different participants and a higher dollar value can be utilized to exchange for lands or public

interest therein that BLM has identified for high priority acquisition accordance with land use plans.

LAND ADJUSTMENT PROGRAM

The land adjustment program will make full use of all land adjustment tools as appropriate. These include land for land exchanges, land for other interests such as minerals, land or interest therein for easements (access, conservation), land sales, purchases, transfers and donations. Any of these tools could be used individually or in combinations to meet the land adjustment objectives. It is anticipated and emphasized that land exchanges will provide the greatest opportunity to improve the landownership pattern. No exchange may be completed without a determination that the public interest will be well served according to 43 CFR 2200.06 (b).

SCOPE OF THE PROGRAM

Casper District 2.9 million acres of public lands and interest therein
8.5 million acres of federal mineral estate.

For exchanges in order to minimize negative local impacts such as loss of Payment in Lieu of Taxes (PILT), preference should be first given to acquiring lands in counties where these public lands are to be disposed of. If private lands cannot be acquired in the affected counties then preference should be to acquire lands or interests therein for counties within the affected resource area, followed by preference for counties within the Casper District, and finally, preference within the State of Wyoming. The public interest determination and scope of affect as well as the feasibility of the exchange will dictate the applicability of the above preferences, however, they should, at lease, be considered in the process.

LAND ADJUSTMENT EVALUATION CRITERIA

The following acquisition and disposal evaluation and ranking criteria were approved by the Casper District Corporate Board (CB) on October 11, 1995. They were developed by an interdisciplinary team referred to as the Casper District Land Exchange Team (LET) comprised of members from the resource areas and the district. The criteria were derived from laws, regulations, policy, program/resource management experience, planning decisions and presented in draft to all district personnel for review and comment.

These criteria are to be used to evaluate, rank and prioritize land exchange proposals districtwide. This criteria will be used by the LET to evaluate all exchange proposals within the district and present their recommendations to the CB. The CB will make the decision as to whether to proceed with the proposal.

Acquisition Criteria
for Casper District

Given: Acquisition of land has to have and/or provide public access that can be managed effectively and cost efficiently according to BLM goals and initiatives. Can this given be met? **(Yes or No)** (If **yes** continue completing ranking criteria)

Explain: (i.e., non-controlled access, restricted or cooperative)

_____

_____

Ranking Criteria (points awarded) **Points**

1) Public values.

a) Recreation

1) Hunting

a)Big Game _____

1)Multiple species (15 points)

or

2)Single species (10 points)

b)Small Game _____

1)Multiple species (15 points)

or

2)Single species (10 points)

2) Fishing (15 points) _____

3) ORV Use (If meets planning or public demand objectives)

a) Present (5 points) _____

b) Potential (5 points) _____

4) Scenic (0-15 points in increments of 5 points) _____

*(Based on visual resource management ratings)

5) Other Recreation Value(s) (5 points each) _____

(Specify) _____

b) Resource(s) Management

* If the resource value is present, would the value(s) acquired or consolidated be/add to the cost efficiency

and manageability of them by BLM/federal agency by completing the land adjustment.

1) Improves Cost and management efficiency in:

1) Cultural Resources (5 points) _____
2) Forestry Resources (5 points) _____
3) Valuable Historic Resources (5 points) _____
4) Minerals Resources (5 points) _____
*Indicate which minerals affected:
a) Oil and Gas leases _____
b) Coal leases _____
c) Locatables _____
d) Salables _____
5) Paleontological Resources (5 points) _____
6) Range Resources (5 points) _____
8) Watershed(5 or 10 points) _____
(wetlands/riparian)
7) Wildlife Resources (habitat) (5 points) _____
8) T & E species (5 points) _____
9) Other(name)_____ (5 points) _____

c) Unique Opportunities (5-50 points in increments of 5) _____

Explanation: _____
_____
_____

Note: Unique opportunities may also be qualified by factors that aid in the economics of the opportunities, i. e. Proponent shares a percentage of the expenses on the evaluation of the public land. Such expenses as the costs of cultural inventory, T&E, appraisal, etc.

2) Provide access to blocks of consolidated federal Land or State(?)lands. _____

5 points for 1-640 acres
10 points for 640-2000 acres
15 points for 2,000-5,000 acres
20 points for 5,000-10,000 acres
30 points for 10,000 + acres

Total Points: _____

a) Acres in consolidated blocks that access effects: _____ acres.

Further Explanation of topics:

Criteria for Disposal of Public Lands
Casper District

Given: Public interest will be well served.

Any one or more of the following criteria may be used to justify the disposal of public land:

* **There will be no acre restriction on disposal.**

___ public land because of its location and other characteristics, is difficult and uneconomical to manage.

___ public land is not suitable for management by another federal department or agency.

___ public land acquired for a specific purpose is no longer required for that or any other federal purpose.

___ disposal of public land would serve important public purposes

___ public land is more suitable for residential, commercial, agriculture or industrial development in non-federal ownership

___ create ownership patterns that allow for local community development that cannot be achieved prudently or feasiblely on land other than public land and which outweigh other public objectives and values.

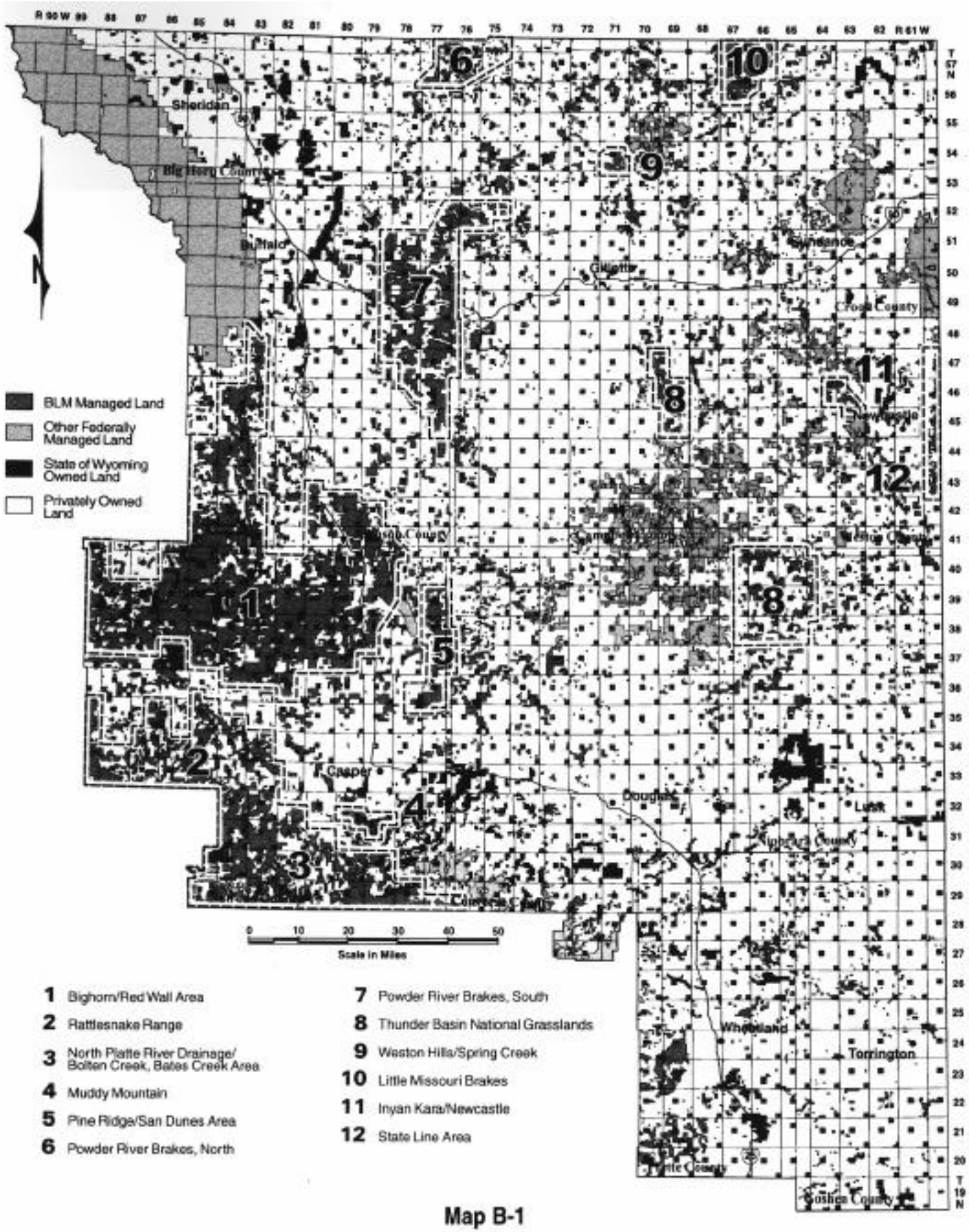
___ consistent with the mission of BLM and land use plans

**** Dispose of entire grazing allotment/lease (yes or no)**
Acres in grazing allotment/lease: _____

CASPER DISTRICT LANDOWNERSHIP MAP NARRATIVE

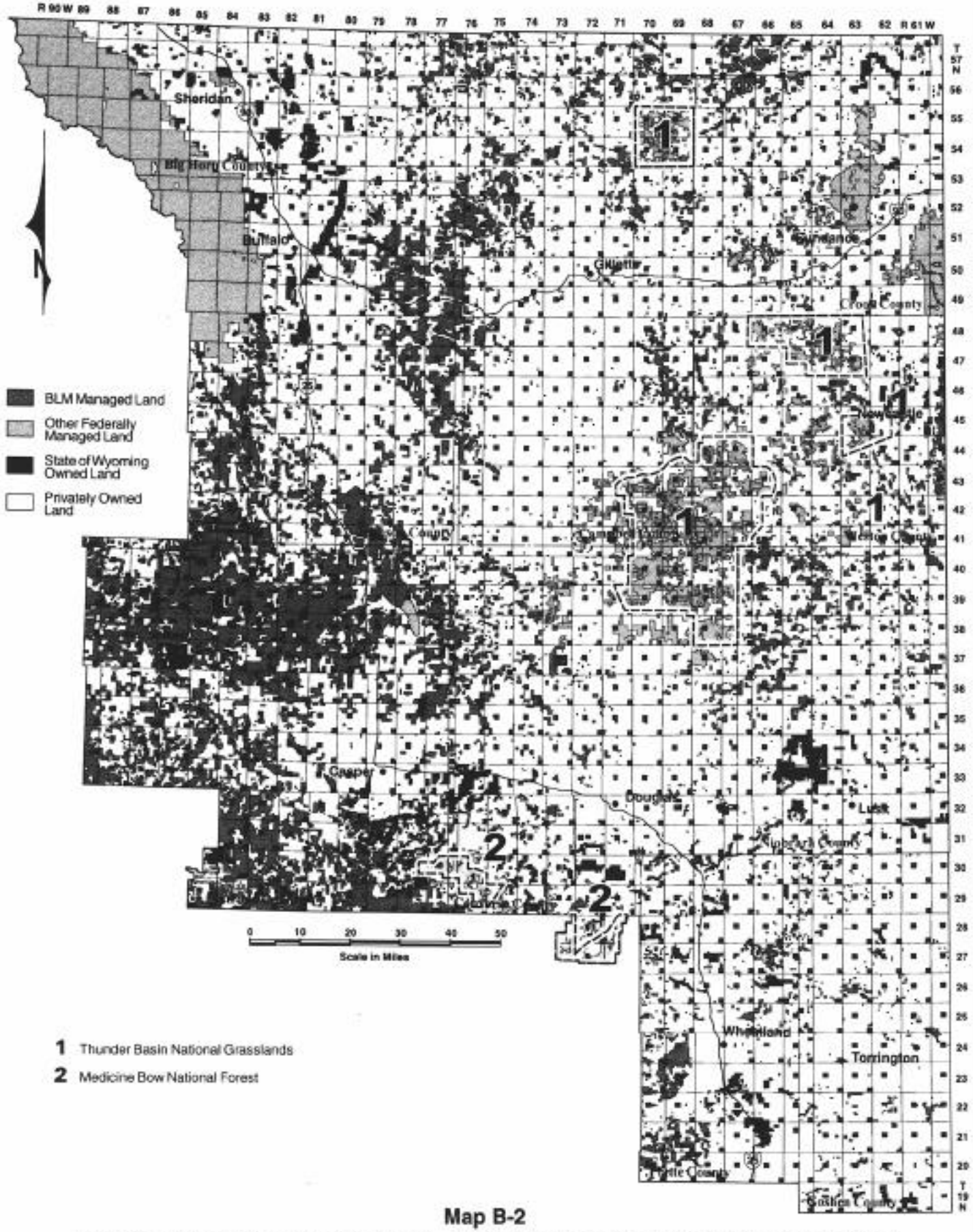
The following areas identified on the Casper District land status map for building or consolidating within for future landownership patterns were developed by the LET (land exchange team) in conformance with current planning documents and Record of Decisions. They were reviewed, but should continued to be fine tuned as appropriate by districtwide resource specialists using their general and specific knowledge of the district land pattern and uses. These areas mostly are defined by larger blocks of federal ownership with private surface inholdings. Also noted were areas identified by the public as lacking necessary access to these larger blocks of public lands. It should be understood that the intent is to build and consolidate within these areas, however this does not completely negate trading out of these areas depending on the merits of the individual proposal. The remaining parcels not identified within these areas are mostly scattered an/or difficult to manage public land parcels that do not offer

much public benefit and may be more beneficial in private ownership or administered by either local, county, State or other federal agencies. However, each exchange no matter where it is located in this Casper District landownership map will be evaluated on its own merit and the public interest determination will be a major determination factor as to whether to pursue it or not.



Map B-1

Lands Adjustment Strategy--Potential Acquisition Areas-BLM



Map B-2

Lands Adjustment Strategy--Potential Acquisition Areas-USFS

APPENDIX G

Buffalo Resource Area Wild and Scenic Rivers Review of Waterways in the Buffalo Resource Management Plan Planning Area -- October 14, 1994

As part of the planning evaluating the Buffalo RMP, the BLM planning team members completed a wild and scenic rivers (WSR) review of all BLM- administered public land surface along waterways within the Buffalo planning area. This review was to determine if any of these BLM-administered public lands meet the wild and scenic rivers eligibility criteria and suitability factors, as identified in the Wild and Scenic Rivers Act (WSRA).

Public Involvement and Coordination

Wyoming BLM staff met with representatives of various Wyoming state agencies, including the governor's office, in January 1991 and June 1993. These meetings were held specifically to reach a mutual understanding of the WSR review process, and of the wild and scenic rivers eligibility criteria and suitability factors BLM uses in the process. This included some agreement on any needed refinements of these criteria and factors, specific to Wyoming, and their statewide application on BLM-administered public lands. The eligibility criteria and suitability factors, including minor refinements agreed to at that time, are still consistent with the later-released BLM Wild and Scenic Rivers Manual 8351 (May 19, 1992). Wyoming state government disagreed with giving any consideration to reviewing waterways that do not contain water year-round (intermittent and ephemeral waterways). The Wyoming BLM recognizes that position but is obligated to follow the BLM manual requirement to include intermittent and ephemeral waterways in their review.

The Wyoming BLM State Director's policy and guidance for conducting the BLM WSR review process was issued December 31, 1992. Minor editorial refinements to this policy and guidance were made on June 29, 1993, to make the wording more consistent with BLM Manual 8351.

In May 1993 and December 1994, BLM personnel from the Buffalo Resource Area office as well as the state office briefed Wyoming state agencies on the preliminary and final eligibility and suitability findings of the WSR review on the Buffalo planning area. Letters describing the review process and the eligibility and suitability determinations that BLM made were sent to the people, agencies, and groups on the Buffalo Plan mailing list and other interested parties to solicit comments and public involvement.

Individual meetings were held with private landowners with property adjacent to all BLM-administered public lands along the waterway review segments. Public meetings on the eligibility review were conducted in Buffalo, Kaycee, and Casper on August 24, 25, and 26, 1993, respectively. Public meetings on the suitability review were conducted in Buffalo and Kaycee on January 25 and March 2, 1994, respectively. Briefings on the eligibility and suitability determinations were also given to the Wyoming Congressional Delegation

representatives and the Johnson County Commissioners. (Note that the WSR review for the Buffalo planning area did not result in finding any BLM-administered public lands in Sheridan and Campbell counties that meet either the eligibiiy criteria or the suitability factors).

Media involvement has included press releases in several Wyoming newspapers and radio stations and numerous articles on wild and scenic rivers have appeared in the *Buffalo Bulletin,* the *Casper Star Tribune* and other local and regional newspapers.

PROCESS

The following definitions apply to key terms used in the WSR review process.

Waterway: A flowing body of water or estuary or a section, portion, or tributary thereof, including rivers, streams, creeks, runs, kills, rills, and small lakes. For purposes of this review, a waterway is not required to have water in it year-round and may be ephemeral or intermittent.

Public lands: The BLM-administered public land surface along waterways within a planning area. Those "split estate lands," where the land surface is state or privately-owned and the federal mineral estate is administered by the BLM, are not involved with these reviews. Other references to segments, parcels, corridors, and waterways all represent public lands, which is the basis for our review.

The BLM wild and scenic rivers review in the Buffalo planning area will entail a three-step process of:

1. determining if BLM-administered public lands along waterways meet the eligibility criteria to be tentatively classified as wild, scenic, or recreational;

2. determining if any of those public lands that meet the eligibility criteria also meet the wild and scenic river suitability factors; and,

3. determining how any of those public lands that meet the suitability factors will be managed.

These steps are further defined as follows:

Step I: Wild and Scenic Rivers Eligibility Criteria Review and Tentative Classification

To meet the eligibility criteria, a waterway must be "free-flowing" and, along with its adjacent land area, must possess one or more "outstandingly remarkable" values. As part of the eligibility review, BLM planning team members reviewed all waterways in the Buffalo

planning area to see if they contained any BLM- administered public lands that meet the eligibility criteria. Only those portions of waterways flowing through BLM-administered public lands were considered. The following are the guidelines used in applying the eligibility criteria on BLM- administered public land surface in the Buffalo planning area.

1. **Free-flowing:** Free-flowing is defined in the WSRA as "existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway." The existence of small dams, diversion works, or other minor structures at the time the river segment is being considered shall not automatically disqualify it for possible addition to the National Wild and Scenic Rivers System (WSRS). A river need not be "boatable or floatable" in order to be eligible; there is no "minimum flow" requirement.

2. **Outstandingly Remarkable Values:** The BLM-administered public land surface along waterways must also possess one or more outstandingly remarkable values to be eligible for further consideration. Outstandingly remarkable values relate to scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar resource values.

   The term **outstandingly remarkable value** is not precisely defined in the WSRA. However, these values must be directly waterway related. The criteria for outstandingly remarkable values, used for the review of BLM-administered public land surface in the Buffalo planning area, are as follows:

   Scenic: The landscape elements of landform, vegetation, water, color, and related factors result in notable or exemplary visual features and/or attractions. Additional factors such as seasonal variations in vegetation, scale of cultural modifications, and length of time negative intrusions are viewed can also be considered when analyzing scenic values. Scenery and visual attractions may be highly diverse over the majority of the BLM-administered public land surface involved; are not common to other waterways in the area; and must be of a quality to attract visitors from outside the area.

   Recreational: Recreational opportunities on the BLM-administered public land surface are unique enough to attract visitors from outside the area. Visitors would be willing to travel long distances to use the waterway resources on the public lands for recreational purposes. Waterway related opportunities could include, but are not limited to, sightseeing, wildlife observation, photography, hiking, fishing, hunting, and boating.

   Interpretive opportunities may be exceptional and attract visitors from outside the area. The waterway may provide settings for national or regional commercial use or competitive events.

   Geologic: The BLM-administered public land surface provides an example(s) of a

geologic feature, process, or phenomenon that is rare, unusual, or unique to the area. The feature(s) may be in an unusually active stage of development, represent a "textbook" example and/or represent a unique or rare combination of geologic features (for example, erosional, volcanic, glacial, or other geologic structures).

Fisheries: The fishery values on the BLM-administered public land surface may be judged on the relative merits of either fish populations or habitat, or a combination of these conditions. For example:

Populations. The waterway or waterway segment on BLM-administered public land surface is a contributor to one of the top producers of resident, indigenous fish species, either nationally or regionally. Of particular significance may be the presence of wild or unique stocks, or populations of federally listed or candidate threatened or endangered species. Diversity of species is also important.

Habitat. The BLM-administered public land surface is contributing to exceptionally high quality habitat for fish species indigenous to the region. Of particular significance may be habitat for federally listed or candidate threatened and endangered species.

Wildlife: Wildlife values on the BLM-administered public land surface may be judged on the relative merits of either wildlife populations or habitat, or a combination of these conditions. For example:

Populations. The BLM-administered public land surface is contributing to populations of resident or indigenous wildlife species important in the area or nationally. Of particular significance are species considered to be unique or populations of federally listed or candidate threatened or endangered species. Diversity of species is also important.

Habitat. The BLM-administered public land surface is contributing to exceptionally high quality habitat for wildlife species important in the area or nationally, or may provide unique habitat or a critical link in habitat conditions for federally listed or candidate threatened or endangered species. Adjacent habitat conditions are such that the biological needs of the species are met.

Cultural: The BLM-administered public land surface contains examples of outstanding cultural sites which have unusual characteristics relating to prehistoric or historic use. Sites may be important in the area or nationally for interpreting prehistory or history; may be rare and represent an area where a culture or cultural period was first identified and described; may have been used concurrently by two or more cultural groups; or may have been used by cultural groups for rare or sacred purposes.

Historical: The BLM-administered public land surface contains a site(s) or feature(s) associated with a significant event, an important person, or a cultural activity of the past that was rare, unusual, or unique in the area.

Note: Eligibility for inclusion in the National Register of Historic Places, by itself, is not sufficient justification for being considered outstandingly remarkable.

Similar Values: Other values may include significant hydrologic, paleontologic, botanic, scientific, or ecologic resources as long as they are waterway related.

3. **Tentative Classification:** At the same time that eligibility determinations are made, BLM-administered public lands that meet the eligibility criteria are also given a tentative classification (either wild, scenic, or recreational), as required by the WSRA. Tentative classification is based on the type and degree of human developments associated with the BLM-administered public lands involved and adjacent lands at the time of the review. Actual classification is a congressional legislative determination.

The tentative classifications, as used by BLM in Wyoming, are further defined as follows:

Wild Waterway Areas: Wild areas are those where the waterways or sections of waterways on the BLM-administered public land surface are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America. Wild means undeveloped; roads, dams, or diversion works are generally absent from a ¼-mile corridor on both sides of the waterway.

Scenic Waterway Areas: Scenic areas are those where the waterways or sections of waterways on the BLM-administered public land surface are generally free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads. Scenic does not necessarily mean the waterway corridor has to have scenery as an outstandingly remarkable value; however, it means the waterway or waterway segment may contain more development (except for major dams or diversion works) than a wild segment and less development than a recreational segment. For example, roads may cross the waterway in places but generally do not run parallel to it. In certain cases, if a parallel road is unpaved and well-screened from the waterway by vegetation, a hill, etc., it could qualify for scenic classification.

Recreational Waterway Areas: Recreational areas are those where the waterways or sections of waterways on the BLM-administered public land surface are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past. Parallel roads or railroads or the existence of small dams or diversions can be allowed in this classification. A recreational area classification does not

imply that the waterway or section of waterway on the public land surface will be managed or have priority for recreational use or development.

Results of the Wild and Scenic Rivers Eligibility Review for the Buffalo Planning Area

The Buffalo WSR Review Team met on March 27 and December 18, 1992, and January 6, 1993, to conduct the eligibility review for the waterways in the Buffalo planning area. Because of the broad interpretation of the "free flowing" criterion, all waterways reviewed were assumed to be free-flowing. Using an interdisciplinary approach, these waterways were further reviewed to determine whether any BLM-administered public lands along their courses contained any of the outstandingly remarkable values described in the eligibility criteria. Of the 120 waterways reviewed in the planning area, the BLM-administered lands along 116 of the waterways were found to not have outstandingly remarkable values and were dropped from further consideration.

Pursuant to BLM Manual 8351 (May 19,1992), an additional eligibility criterion, the "Jurisdictional Considerations," was established. This new criterion provided that, where the BLM-administered public land surface represents less than 40% of the shoreline in a waterway or waterway segment being reviewed, the BLM-administered public land surface involved will be considered to be ineligible for further consideration. Subsequently, this jurisdictional eligibility criterion policy was rescinded (BLM Washington Office Instruction Memorandum No. 94-69, December 3, 1993) because jurisdictional considerations (administrative role or presence) are factors of suitability, rather than eligibility criteria, and are more appropriately addressed in the suitability determination phase of the review process. This situation had no effect on the wild and scenic rivers review for the Buffalo planning area.

The BLM lands along the remaining four waterway review segments, Beartrap Creek (including a short tributary segment of the North Fork of the Red Fork of the Powder River), the North Fork of the Powder River, the Middle Fork of the Powder River, and the Powder River at Cantonment Reno were determined to meet the wild and scenic rivers eligibility criteria.

Attachment A (Wild and Scenic Rivers Eligibility Review) shows the waterways containing BLM-administered public lands, that were reviewed and the eligibility determinations made for the public lands involved.

Attachment B (Review Segment Identification and WSR Classification of BLM Lands) is a detailed summary of the WSR eligibility review. Table B1 also shows the tentative classification (either wild, scenic, or recreational) given to each of the BLM-administered public land parcels that meet the eligibility criteria.

Step II. Wild and Scenic Rivers Suitability Review

All of the BLM-administered public lands that are found to meet the eligibility criteria and that are classified (wild, scenic, or recreational) are further reviewed to determine if they meet the WSR suitability factors. The suitability determinations are made after the general public, local, state, tribal, and federal governments and agencies, and other interested parties have reviewed the eligibility and classification determinations.

Some factors to be considered in making the suitability determinations include, but are not limited to:

1. Characteristics which do or do not make the BLM-administered public lands involved a worthy addition to the National WSRS.

2. Current status of landownership (including mineral ownership) and land and resource uses in the area, including the amount of private land involved, and any associated or incompatible land uses.

3. Reasonably foreseeable potential uses of the BLM-administered public lands involved and related waters which would be enhanced, foreclosed, or curtailed if they were included in the WSRS, and the values which could be foreclosed or diminished if the BLM-administered lands are not protected as part of the WSRS.

4. Public, state, local, tribal, or federal interest in designation or nondesignation of any part or all of the waterway involved, including the extent to which the administration of any or all of the waterway, including the costs thereof, may be shared by state, local, or other agencies and individuals.

5. Estimated cost of acquiring necessary lands and interests in lands and of administering the area if it is added to the WSRS. Section 6 of the WSRA outlines policies and limitations of acquiring lands or interests in land by donation, exchange, consent of owners, easement, transfer, assignment of rights, or condemnation within and outside established river boundaries.

6. Ability of the BLM to manage the BLM-administered public lands involved as a wild and scenic river or other mechanisms (existing or potential) to protect identified values other than WSR designation.

7. Historical or existing rights which would be adversely affected as to foreclose, extinguish, curtail, infringe, or constitute a taking which would entitle the owner to just compensation if the BLM-administered public lands were included in the WSRS. In the suitability review, adequate consideration will be given to rights held by other landowners and applicants, lessees, claimants, or authorized users of the BLM-administered public lands involved.

8. Other issues and concerns, if any.

Results of the Wild and Scenic Rivers Suitability Review for the Buffalo Planning Area

The Buffalo WSR suitability determinations were based on an internal BLM screening of the above eight factors. Both in-house knowledge and comments received from the public were used to make the determinations. Much of the public input received during the eligibility review involved comments and discussion about the WSR suitability factors. This input and the public input during the suitability review were very valuable in making the WSR suitability determinations.

The BLM-administered public lands along the review segment of the Middle Fork of the Powder River previously determined to meet the eligibility criteria, were also determined to meet the suitability factors.

It was further determined that the BLM-administered public lands along the Beartrap Creek (including a short tributary segment of the North Fork of the Red Fork of the Powder River), the North Fork of the Powder River, and the Powder River at Cantonment Reno review segments do not meet the WSR suitability factors. The primary suitability factors involved are factors 2, 3 and 4. That is, (1) the BLM-administered public lands involved are land-locked by private lands and are inaccessible to the public, and obtaining public access to these BLM-administered public lands would not be likely; (2) there is a potential that values, water rights, and uses on the adjacent private lands could be adversely affected by a WSR designation on the public lands, while there would be little potential for values on the public lands to be foreclosed or diminished, if they were not included in the WSR system; and (3) the overwhelming public opinion expressed was by local landowners who adamantly oppose the WSR concept and any such designation in the Buffalo planning area. There was absolutely no interest expressed by any entity (with or without administrative jurisdiction or landownership within the review segments of these waterways) for cooperating or sharing in the administration or cost of managing these segments under a WSR designation.

All parties who participated in the suitability review were notified of these determinations by mail. Attachment C (Wild and Scenic Rivers Suitability Review) is a detailed summary of the suitability review of the waterway segments containing BLM-administered public lands that meet the eligibility criteria and the suitability determinations made for the public lands involved.

Step III. Management of BLM-administered Public Lands That Meet the Suitability Factors

BLM land use planning decisions will be developed and implemented (if it is determined that the existing management direction is not adequate) for any BLM-administered public lands that are determined to meet the suitability factors. These planning decisions will be

made in the Buffalo Plan and will include management objectives, management actions, and appropriate allocations of land and resource uses that will maintain or enhance the outstandingly remarkable values and tentative wild and scenic waterway classifications identified on the BLM-administered public lands involved.

BLM-administered public lands that are determined to meet the suitability factors would then be managed indefinitely under the BLM's land use plan management decisions. At some time in the future, the Secretary of the Interior may direct the BLM to participate in the development of WSR study reports. The results and documentation of the BLM wild and scenic river reviews for the Buffalo planning area would be used in developing any such reports. Under the requirements of the WSRA, if there is a need to provide any temporary or interim protection of the WSR values on suitable areas before the Plan is completed, that will also be done.

ATTACHMENT A

BUFFALO RESOURCE AREA
WILD AND SCENIC RIVERS ELIGIBILITY REVIEW
DECEMBER 12, 1993

PUBLIC INVOLVEMENT DURING THE WILD AND SCENIC RIVERS ELIGIBILITY REVIEW

Early in 1993, the BLM reviewed the BLM-administered public lands along 120 waterways in Johnson, Sheridan, and Campbell counties to determine if they meet the WSR eligibility criteria of being free flowing and having one or more outstandingly remarkable values. The preliminary findings of the BLM multidisciplinary staff were that BLM-administered public lands along 19 waterways meet the eligibility criteria.

In making the preliminary eligibility determinations, if there was any question about whether or not there were actually any outstandingly remarkable values on BLM-administered public lands, those questionable lands were included in the list of those that met the eligibility criteria. This was done to help avoid overlooking any potential outstandingly remarkable values on BLM-administered public lands and to allow the public the opportunity to provide input and information to help finalize the eligibility determinations. Private landowners adjacent to the BLM-administered public lands involved were contacted for their comments on the preliminary eligibility determinations. Mailings were also sent to all parties on the Buffalo Plan mailing list requesting their review and input on the preliminary eligibility determinations and announcing public meetings to be conducted in Buffalo, Kaycee, and Casper, Wyoming.

The Buffalo meeting was attended by 34 people, 37 in Kaycee, and 31 in Casper. Comments at the public meetings were predominantly in opposition to the WSR concept in general, although a number did address the eligibility criteria and specific preliminary eligibility determinations.

Over 200 people submitted either written comments or signed a petition. Approximately 120 people submitted a form letter that disagreed with all the identified outstandingly remarkable values and with the preliminary eligibility determinations. Another 34 people signed a petition that basically opposed the WSR concept in general and stated that none of the waterway segments crossing BLM-administered public lands were unique or outstanding when compared to other waterways in the Big Horn Mountains. Approximately 50 people submitted individual written comments. Some of these individual comments were in support of the wild and scenic rivers concept and in support of the outstandingly remarkable values identified and the preliminary eligibility determinations for the Middle Fork and North Fork of the Powder River and other waterway segments. However, the majority of these individual comments were in opposition to the WSR concept and disagreed with the outstandingly remarkable values identified and with the preliminary eligibility determinations.

Based on further analysis of all the public comments received and of the preliminary eligibility determinations, it was determined that the BLM-administered public lands along 15 of the 19 waterway review segments do not meet the WSR eligibility criteria and that the BLM-administered public lands along 4 of the waterway review segments do meet the WSR eligibility criteria. The BLM-administered public lands along 7 of the waterway review segments that were grouped for their unique, undisturbed biodiversity values, were dropped from further WSR consideration because further analysis showed that these values were not particularly water- or waterway-related. The BLM-administered public lands along 8 of the waterway review segments were dropped from further consideration because further analysis showed that their scenic values were not outstandingly remarkable when compared to other areas along waterways in the Big Horn Mountains. The BLM-administered public lands that were determined to meet the eligibility criteria are along the Beartrap Creek, the Middle Fork of the Powder River, the Powder River at Cantonment Reno, and the North Fork of the Powder River review segments. The eligibility analyses for these four waterway review segments follow. Table A1 is a more complete summary of the eligibility determinations.

RESULTS OF THE WILD AND SCENIC RIVERS ELIGIBILITY REVIEW OF BLM-ADMINISTERED PUBLIC LANDS ALONG WATERWAYS IN THE BUFFALO PLANNING AREA

BLM-ADMINISTERED PUBLIC LANDS ALONG THE NORTH FORK OF THE POWDER RIVER DETERMINED TO MEET THE WILD AND SCENIC RIVERS ELIGIBILITY CRITERIA

Segment of the Waterway Reviewed

The segment of the North Fork of the Powder River that was reviewed is 10.5 miles long. It begins approximately 2 miles below Dull Knife Reservoir in T. 47 N., R. 85 W. and ends 0.5 mile below the confluence with Pass Creek in section 36, T. 46 N., R. 84 W. Within this segment of the waterway, the river flows through the North Fork Wilderness Study Area, which includes three BLM-administered public land parcels that have been determined to meet the wild and scenic rivers eligibility criteria. The river flows through these BLM-administered public land parcels for a total of 8.5 miles (about 81% of the segment length reviewed). The distance the river flows through each of these parcels ranges from 1.25 miles through the smallest parcel to 5.75 miles through the largest parcel. On these BLM-administered public land parcels, the river flows through an extremely wild canyon with very steep rock walls and forested canyon benches. Travel through the canyon on these BLM-administered public lands provides a unique primeval experience to adventurous recreationists.

Table A1 and attachment B contain further details on each of the BLM-administered public land parcels along the North Fork of the Powder River that meet the eligibility criteria.

BLM-ADMINISTERED PUBLIC LANDS ALONG BEARTRAP CREEK (INCLUDING A SHORT TRIBUTARY SEGMENT OF THE NORTH FORK OF THE RED FORK OF THE POWDER RIVER) DETERMINED TO MEET THE WILD AND SCENIC RIVERS ELIGIBILITY CRITERIA

Segment of the Waterway Reviewed

The segment of Beartrap Creek that was reviewed is 2.75 miles long. It begins in the SE¼ of section 1, T. 44 N., R. 85 W. and ends at the confluence with the North Fork of the Red Fork of the Powder River in section 19, T. 44 N., R. 84 W. The tributary segment of the North Fork/Red Fork/Powder River that was reviewed is 1.35 miles long. It begins in the NE¼NE¼ section 19, T. 44 N., R. 84 W. and ends in the NE¼NE¼ section 29, T. 44 N., R. 84 W. Within these segments of the waterways, the creeks flow through one BLM-administered public land parcel for 3 miles (about 73% of the segment length reviewed). This BLM-administered public land parcel contains an unusual diversity of vegetative species and colorful and scenic rock formations. The historic Dull Knife Battlefield also

extends into the lower portion of this BLM-administered public land parcel. These waterway review segments may have been an escape route for Indians from the Dull Knife Battle.

Table A1 and attachment B contain further details on the BLM-administered public land parcel along Beartrap Creek review segments that meet the eligibility criteria.

BLM-ADMINISTERED PUBLIC LANDS ALONG THE MIDDLE FORK OF THE POWDER RIVER DETERMINED TO MEET THE WILD AND SCENIC RIVERS ELIGIBILITY CRITERIA

Segment of the Waterway Reviewed

The segment of the Middle Fork of the Powder River that was reviewed is 12.6 miles long. It begins at the Hazelton County Road in section 26, T. 42 N., R. 86 W., in Washakie County, and ends at the section line between the SW¼SW¼ section 13, and the NW¼NW¼ section 23, T. 42 N., R. 84 W., in Johnson County. Within this segment of the waterway, the river flows through five parcels of BLM-administered public land that have been determined to meet the wild and scenic rivers eligibility criteria. The river flows through these BLM-administered public land parcels for a total of 10.7 miles (about 85% of the segment length reviewed). The distance the stream flows through these parcels ranges from 0.25 mile through the smallest parcel to 5 miles through the largest parcel. These BLM-administered public land parcels include a spectacular river canyon, a blue-ribbon natural trout fishery, the famous Outlaw Cave, numerous Native American cultural sites, and part of an elk and mule deer crucial winter range.

Table A1 and attachment B contain further details on each of the BLM-administered public land parcels along the Middle Fork of the Powder River that meet the eligibility criteria.

BLM-ADMINISTERED PUBLIC LANDS ALONG THE POWDER RIVER (AT CANTONMENT RENO) DETERMINED TO MEET THE WILD AND SCENIC RIVERS ELIGIBILITY CRITERIA

Segment of the Waterway Reviewed

The segment of the Powder River (at Cantonment Reno) that was reviewed is 2 miles long. It begins in the SW¼ of section 17, T. 44 N., R. 78 W., and ends in the S½S½ section 8, T. 44 N., R. 78 W. Within this segment of the waterway, the river flows through two parcels of BLM-administered public land that have been determined to meet the wild and scenic rivers eligibility criteria. The river flows through these BLM-administered public land parcels for a total of 1.5 miles (about 75% of the segment length reviewed). The distance the river flows through each of these parcels is 0.6 mile through the smallest parcel and 0.9 mile through the largest parcel. This segment of the waterway and these BLM-administered public land parcels are within the original boundaries of the 1876 military

supply depot, Cantonment Reno (later named Fort McKinney), that served General Crook's campaign against the Sioux and Cheyenne Indian nations. The history of this fort and the events surrounding it are of national interest.

Table A1 and attachment B contain further details on each of the BLM-administered public land parcels along the Powder River at Cantonment Reno that meet the eligibility criteria.

TABLE A1

BUFFALO PLANNING AREA WILD AND SCENIC RIVERS ELIGIBILITY REVIEW SUMMARY

River/Stream (waterway) Reviewed	Free-flowing	Outstandingly Remarkable Values on BLM Lands	BLM Lands Eligible?
Arch Creek	yes	none	no
Bachaus Creek	yes	none	no
Barber Creek	yes	none	no
Beartrap Creek (& NF/RF/PR Trib.)	yes	historic	yes
Beaver Creek (Horn area)	yes	none	no
Beaver Creek (Gillette)	yes	none	no
Beaver Creek (Barnum)	yes	none	no
Belle Fourche River	yes	none	no
Big Remington Creek	yes	none	no
Billy Creek	yes	none	no
Blue Creek	yes	none	no
Buffalo Creek (Upper)	yes	none	no
Buffalo Creek (Sheridan)	yes	none	no
Bull Creek	yes	none	no
Bullwhacker Creek	yes	none	no
Cabin Creek	yes	none	no
Cat Creek	yes	none	no
Clear Creek (Powder)	yes	none	no
Coachy Creek	yes	none	no
Coal Creek	yes	none	no
Corpe Creek	yes	none	no
Corral Creek	yes	none	no
Corral Creek (Big Horn Mountains)	yes	none	no
Cottonwood Creek	yes	none	no
Cottonwood Creek (Arvada)	yes	none	no
Cow Creek	yes	none	no
Crazy Woman Creek	yes	none	no
Crooked Creek	yes	none	no
Dead Horse Creek	yes	none	no
Dead Horse Creek (Campbell)	yes	none	no
Deep Creek	yes	none	no
Deer Creek	yes	none	no
Doyle Creek	yes	none	no
Dry Creek (Rockypoint)	yes	none	no
Dry Creek (I-90)	yes	none	no
Dry Poison	yes	none	no
Dry Creek (Petrified tree)	yes	none	no
Dry Trail Creek	yes	none	no
Dugout Creek	yes	none	no
Eagle Creek	yes	none	no
East Pass Creek	yes	none	no

Eightyfive Creek	yes	none	no
Fence Creek	yes	none	no
Flying E Creek	yes	none	no
Fortification Creek	yes	none	no
Fourmile Creek	yes	none	no
Gardner Creek	yes	none	no
Hanging Women Creek	yes	none	no
Hoe Creek	yes	none	no
Horse Creek (Recluse)	yes	none	no
Horse Creek (north)	yes	none	no
Horse Creek (South)	yes	none	no
House Creek	yes	none	no
Jay Creek	yes	none	no
Johnson Creek	yes	none	no
Little Tongue River	yes	none	no
Little Nutshell Creek	yes	none	no
Little Bull Creek	yes	none	no
Little Powder River	yes	none	no
Little Buck Creek	yes	none	no
Little Piney Creek	yes	none	no
Little Eagle Creek	yes	none	no
Little Remington Creek	yes	none	no
Logan Creek	yes	none	no
Meadow Creek	yes	none	no
Mickelberry Creek	yes	none	no
Middle Fork Powder River	yes	scenic, recreational, historic, cultural, fish and wildlife	yes
Middle Fork Crazy Woman Creek	yes	none	no
Mitchell Creek	yes	none	no
Mosier Gulch	yes	none	no
Murphy Creek	yes	none	no
north Fork Powder River	yes	scenic, recreational, wildlife	yes
north Poker Creek	yes	none	no
north Prong Willow Creek	yes	none	no
Pass Creek	yes	none	no
Poison Creek	yes	none	no
Poker Creek	yes	none	no
Pole Creek	yes	none	no
Posey Creek	yes	none	no
Powder River (Cantonment Reno)	yes	historic	yes
Red Canyon Creek	yes	none	no
Red Fork Powder River (Main)	yes	none	no
Red Fork Powder River (north)	yes	none	no
Red Fork Powder River (South)	yes	none	no
Roush Creek	yes	none	no
S A Creek	yes	none	no
Rough Creek	yes	none	no
South Fork Three Bar Creek	yes	none	no
South Fork Crazy Woman Creek	yes	none	no
Salt Creek	yes	none	no

Sheep Creek	yes	none	no
Short Creek	yes	none	no
Simmons Creek	yes	none	no
South Posey Creek	yes	none	no
South and Middle Prong Creek	yes	none	no
South Jay Creek	yes	none	no
South Willow Creek	yes	none	no
Spotted Horse Creek	yes	none	no
South Fork Powder River	yes	none	no
Spring Creek	yes	none	no
Steel Creek	yes	none	no
Stubbs Creek	yes	none	no
Sullivan Creek	yes	none	no
Tepee Creek	yes	none	no
Trabing Dry Creek	yes	none	no
Tributary Horn Creek	yes	none	no
Tributary Little Goose Creek	yes	none	no
Trib. Middle Fork Crazy Woman Creek	yes	none	no
Twentymile Creek	yes	none	no
Twin Creek	yes	none	no
Upper Pass Creek	yes	none	no
Upper north Fork Powder River	yes	none	no
Upper Beartrap Creek	yes	none	no
Wall Creek	yes	none	no
West Bacon Creek	yes	none	no
Willow Creek (Powder River)	yes	none	no
William Creek	yes	none	no
Willow Creek (Bighorn Mountains)	yes	none	no
Yellow Hammer Creek	yes	none	no

ATTACHMENT B

IDENTIFICATION AND CLASSIFICATION OF BLM-ADMINISTERED PUBLIC LANDS WITHIN THE BUFFALO PLANNING AREA DETERMINED TO MEET THE WILD AND SCENIC RIVERS ELIGIBILITY CRITERIA DECEMBER 12, 1993

TABLE B1
IDENTIFICATION AND TENTATIVE CLASSIFICATION OF BLM ADMINISTERED PUBLIC LAND PARCELS THAT MEET THE WILD AND SCENIC RIVERS ELIGIBILITY CRITERIA

BLM-administered Public Land Parcel No.	*Length of Waterway Segment Across BLM Land Parcel (miles)*	*Name of Waterway, or Waterway Segment, and Location of BLM-administered Public Land Parcel*	*Distance to Next BLM Land Parcel (miles)*	*Notes/Description/Outstandingly Remarkable Values of BLM-administered Public Land Parcel*	*Tentative Classification of Waterway Segment Across BLM-administered Public Land Parcel*
BEARTRAP CREEK (and a short tributary segment of the North Fork of the Red Fork of the Powder River)					
1	2.25	Beartrap Creek This BLM parcel is in sections 7 & 18, T. 44 N., R. 84 W.		Outstandingly remarkable values include historic. Primitive canyon, part of historic 1876 Dull Knife Battlefield site and possible escape route for Indians.	Wild
2	0.75	North Fork/Red Fork/Powder River This BLM parcel is in sections 19 & 20, T. 44 N., R. 84 W.	End of Seg-ment Re-viewed	Outstandingly remarkable values include historic. Primitive canyon, part of historic 1876 Dull Knife Battlefield site and possible escape route for Indians.	Wild
Total Miles Across BLM Lands	3.0	**TOTAL LENGTH OF WATERWAY SEGMENT REVIEWED (miles)**	4.1		
	73%	**% BLM JURISDICTION OF WATERWAY SEGMENT REVIEWED**			

TABLE B1
IDENTIFICATION AND TENTATIVE CLASSIFICATION OF BLM ADMINISTERED PUBLIC LAND PARCELS THAT MEET THE WILD AND SCENIC RIVERS ELIGIBILITY CRITERIA (continued)

BLM Administered Public Land Parcel No.	*Length of Waterway Segment Across BLM Land Parcel (miles)*	*Name of Waterway, or Waterway segment, and Location of BLM Administered Public Land Parcel*	*Distance to Next BLM Land Parcel (miles)*	*Notes/Description/Outstandingly Remarkable Values of BLM Administered Public Land Parcel*	*Tentative Classification of Waterway Segment Across BLM Administered Public Land Parcel*
MIDDLE FORK OF THE POWDER RIVER					
1	1.2	This BLM parcel is in sections 25 and 26, T.42 N., R.86 W.	0.4	Outstandingly remarkable values include fisheries. Class 1 fishery.	Recreational
2	0.25	This BLM parcel is in the W½ NW¼ section 30, T.42 N., R.85 W.	0.1	Outstandingly remarkable values include fisheries. Class 1 fishery.	Wild
3	3.25	This BLM parcel is in sections 19, 20, 21, 22, 23, 28, 29, & 30, T.42 N., R.85 W.	0.1	Outstandingly remarkable values include scenic, fisheries, cultural, wildlife, and recreational. Class 1 fishery. Native American cultural sites. Recreational hiking and cultural interpretation opportunities.	Wild
4	1.0	This BLM parcel is in sections 22 & 23, T.42 N., R.85 W.	1.3	Outstandingly remarkable values include scenic, fisheries, cultural, wildlife and recreational. Class 1 fishery. Spectacular, primitive canyon with outstanding, scenic rock formations; Native American cultural sites. Recreational hiking and cultural interpretation opportunities.	Wild
5	5.0	This BLM parcel is in sections 19, 20, 21, 22 and 30, T.42 N., R.84 W, and section 24, T.42 N., R.85 W.	End of Segment Reviewed	Outstandingly remarkable values include scenic, fisheries, wildlife, recreational, historic, and cultural. Spectacular, primitive canyon. Nationally and regionally historic Outlaw Cave. Native American rock art and shelter sites. Class 1 fishery. Recreational hiking and cultural interpretation opportunities.	Wild
Total Miles Across BLM Lands	10.7	**TOTAL LENGTH OF WATERWAY SEGMENT REVIEWED (miles)**	12.6		
	85%	**% BLM JURISDICTION OF WATERWAY SEGMENT REVIEWED**			

TABLE B1
IDENTIFICATION AND TENTATIVE CLASSIFICATION OF BLM ADMINISTERED PUBLIC LAND PARCELS THAT MEET THE WILD AND SCENIC RIVERS ELIGIBILITY CRITERIA (continued)

BLM Administered Public Land Parcel No.	*Length of Waterway Segment Across BLM Land Parcel (miles)*	*Name of Waterway, or Waterway segment, and Location of BLM Administered Public Land Parcel*	*Distance to Next BLM Land Parcel (miles)*	*Notes/Description/Outstandingly Remarkable Values of BLM Administered Public Land Parcel*	*Tentative Classification of Waterway Segment Across BLM Administered Public Land Parcel*
NORTH FORK OF THE POWDER RIVER					
1	1.5	This BLM parcel is in the E½ E½ section 31, T.47 N., R.84 W.; E½ NE¼ section 6, and NW¼ SW¼ section 5, T.46 N., R.84 W.	0.4	Outstandingly remarkable values include scenic, and fisheries. Scenic, primitive canyon. High quality fish habitat and populations.	Wild
2	1.25	This BLM parcel is in the N½ N½ section 8, and NW¼ NW¼ sec. 9, T.46 N., R.84 W.	0.1	Outstandingly remarkable values include scenic, and fisheries. Extremely steep, scenic and primitive canyon. High quality fish habitat and populations.	Wild
3	5.75	This BLM parcel is in sections 8, 9, 15, 22, 23, 25, and 26, T.46 N., R.84 W.	End of Segment Reviewed	Outstandingly remarkable values include scenic, and fisheries. Extremely steep, scenic and primitive canyon. High quality fish habitat and populations.	Wild
Total Miles Across BLM Lands	8.5	**TOTAL LENGTH OF WATERWAY SEGMENT REVIEWED (miles)**	10.5		
	81%	**% BLM JURISDICTION OF WATERWAY SEGMENT REVIEWED**			

TABLE B1
IDENTIFICATION AND TENTATIVE CLASSIFICATION OF BLM ADMINISTERED PUBLIC LAND PARCELS THAT MEET THE WILD AND SCENIC RIVERS ELIGIBILITY CRITERIA (continued)

BLM Administered Public Land Parcel No.	*Length of Waterway Segment Across BLM Land Parcel (Miles)*	*Name of Waterway, or Waterway segment, and Location of BLM Administered Public Land Parcel*	*Distance to Next BLM Land Parcel (miles)*	*Notes/Description/Outstandingly Remarkable Values of BLM Administered Public Land Parcel*	*Tentative Classification of Waterway Segment Across BLM Administered Public Land Parcel*
POWDER RIVER (Cantonment Reno)					
1	0.9	This BLM parcel is in section 17, T.44 N., R.78 W.	0.5	Outstandingly remarkable values include historic. Site of historic military supply depot (Cantonment Reno and later Fort Mckinney) partially on BLM land parcel.	Recreational
2	0.6	This BLM parcel is in section 8, T.44 N., R.78 W.	End of Segment Reviewed	Outstandingly remarkable values include historic. Site of historic military supply depot (Cantonment Reno and later Fort Mckinney) partially on BLM land parcel.	Recreational
Total Miles Across BLM Lands	1.5	**TOTAL LENGTH OF WATERWAY SEGMENT REVIEWED (miles)**	1.5		
	75%	**% BLM JURISDICTION OF WATERWAY SEGMENT REVIEWED**			

ATTACHMENT C

WILD AND SCENIC RIVERS SUITABILITY REVIEW OF BLM-ADMINISTERED PUBLIC LANDS ALONG THE

MIDDLE FORK OF THE POWDER RIVER,

THE NORTH FORK OF THE POWDER RIVER,

THE POWDER RIVER AT CANTONMENT RENO,

AND

BEARTRAP CREEK

IN THE BUFFALO PLANNING AREA

October 14, 1994

PUBLIC INVOLVEMENT DURING THE WILD AND SCENIC RIVERS SUITABILITY REVIEW

Approximately 100 people attended the public meeting held in Buffalo, Wyoming, on February 25, 1994, to discuss the WSR suitability review of the BLM-administered public lands that were determined to meet the WSR eligibility criteria. As identified above, these are the BLM lands along the review segments of Beartrap Creek (including a short tributary segment of the North Fork of the Red Fork of the Powder River), the Middle Fork of the Powder River, the North Fork of the Powder River, and the Powder River at Cantonment Reno. BLM personnel explained the WSR suitability factors and how the suitability review would be conducted on the BLM-administered public lands involved and answered questions. The members of the public who commented were opposed to either a WSR suitable determination or a WSR designation for any lands in the Buffalo planning area. Their main concerns were that such a determination or designation would lead to the federal government taking their water rights and their private lands from them, and to imposing restrictions on their use of their own property or on their activities on the public lands. Some individuals were concerned that a WSR designation would attract people who would want to force public access across private lands to the otherwise inaccessible BLM-administered public lands along the review segments of the North Fork of the Powder River, Beartrap Creek, and the Powder River at Cantonment Reno.

In response to a request at the Buffalo meeting, another meeting was held in Kaycee,

Wyoming, on March 2, 1994, and the comment period on the suitability review (that was to end on February 25, 1994) was extended to March 31, 1994. Approximately 200 people attended the Kaycee meeting and voiced similar concerns as were expressed at the Buffalo meeting.

Approximately 250 individuals and 10 organizations provided comments during the suitability review. The majority of the comments submitted were more in the form of "vote-casting," rather than subjective comments, and were mostly in opposition to either a WSR suitable determination or a WSR designation on any lands in the Buffalo planning area. Again, the concerns were centered around fears that a WSR determination or designation would lead to the federal government taking private water rights and private lands from the local landowners and to imposing restrictions on their use of their own property or on their activities on the public lands.

Only about 8% of the comments favored any WSR suitable determination or designation in the planning area. Opposition to a suitable determination for the BLM-administered public lands along the Middle Fork of the Powder River was less compared to the BLM-administered public lands along the other three waterway review segments. Likewise, a WSR suitable determination or designation for the BLM-administered public lands along the Middle Fork of the Powder River was favored more than the BLM-administered public lands along the other waterways by those supporting the WSR concept.

The Medicine Wheel Alliance, a Native American organization, wrote in favor of the WSR concept and stated that lands along the waterway review segments are considered sacred with strong religious ties. They also mentioned they were sorry that BLM did not conduct meetings on the Sioux, Northern Cheyenne, and Crow reservations, and that BLM did not meet its NEPA and Section 106 consultation responsibilities. In response, the BLM made numerous phone calls and sent certified letters to all tribal chairman and various spiritual leaders offering to go to the reservations to give presentations or meet with any interested parties on wild and scenic rivers. This extended the suitability review comment period through June 1994. To date, the BLM has not received any requests from any Native American representatives to conduct meetings on the reservations or to provide any additional information on the WSR review.

Summary of Suitability Review Comments by Group

Private Individuals

Over 90% of the comments received from private individuals opposed a WSR suitable determination or designation on any lands in the Buffalo planning area. The primary concerns were centered around fears that a WSR determination or designation would lead to a federal government take-over of private water rights and private lands from the local landowners, and to imposing restrictions on their use of their own property or on their activities on the public lands. Approximately 98% of these comments were signed form letters regarding the BLM-administered lands along each of the four waterway review

segments. The majority of the comments were from the Kaycee, Wyoming area. Only a few comments came from outside Wyoming.

Native American

Native American comments on the suitability review were received through the Medicine Wheel Alliance. This alliance serves as a voice on spiritual and cultural matters for the Crow, Northern Cheyenne, and Sioux tribes. The alliance's comments were in favor of a WSR suitable determination and designation on the BLM-administered public lands along all four of the waterway review segments. They commented that these waterways are considered sacred areas with strong religious ties. They gave examples of rivers already included in the WSR system that were designated for their outstandingly remarkable cultural values. The alliance also commented that the BLM should have conducted public meetings on the northern Cheyenne and Crow reservations.

Organizations

Eight organizations commented on the suitability review.

Three organizations (Johnson County Cattlemen's Association, the Wyoming Farm Bureau, and the Johnson County Farm Bureau) were opposed to a WSR suitable determination or designation for the BLM-administered public lands along all four of the waterway review segments. Their concerns were basically the same as those mentioned above regarding federal takeover and restrictions to livestock grazing or other agricultural interests on both BLM-administered public lands and private lands.

One organization (Johnson County Weed and Pest Control Board) was opposed to a WSR suitable determination or designation of the BLM-administered public lands along the Powder River at Cantonment Reno review segment. The concern was that a WSR suitable determination or designation would halt any future weed control activities in this area.

Two organizations, the Sierra Club (northern Great Plains Region) and the Bighorn Forest Users Coalition, were in favor of a WSR suitable determination or designation for the BLM-administered public lands along the Middle and North Forks of the Powder River and the Beartrap Creek review segments. Their comments were based on their views of outstanding scenic, recreation, wildlife, and historic values in these areas and no apparent conflicting uses that would affect suitability or potential designation.

In addition to the Medicine Wheel Alliance, the Native Ecosystems Council was in favor of a suitable determination or a WSR designation for the BLM-administered public lands along all four of the waterway review segments. Their reasons were the same as those mentioned above, on behalf of the Native American interests.

County Government

The Johnson County Commissioners submitted a letter of concern regarding wild and scenic rivers. Their main concern was about the economic impact a WSR designation might have on the county. They would be opposed to any WSR aspect that would adversely affect the economies of local landowners.

The Johnson County Fire Control, Division 2, was opposed to a WSR suitable determination or designation on any lands in the planning area because they felt that it might result in an increase of visitors to the area who would cause fires in areas where they would be difficult and expensive to fight.

State Agencies

The Wyoming Game and Fish Department commented that a WSR suitable determination or designation on the BLM-administered public lands along all four of the waterway review segments involved would be consistent with their wildlife management objectives for these waterways. Their only concern was for the possible increase of people that would visit the BLM-administered public lands along the Middle Fork of the Powder River review segment and the possible affects this may have on wildlife. They suggested that an access plan would be necessary to protect wildlife values.

The Wyoming State Historic Preservation Office commented that they have no objections to a WSR suitable determination or designation on the BLM-administered public lands along all four of the waterway review segments. They expressed a need to implement special measures to protect historic values from the possible increase in public use of the areas.

The Wyoming Water Development Commission commented that a WSR suitable determination or designation on the Powder River at Cantonment Reno review segment could impact the operation of the proposed Middle Fork Dam and Reservoir upstream from this segment. They suggested that a WSR suitable determination or designation on the BLM-administered public lands along the Middle Fork of the Powder River review segment should be limited to that segment of the river where an instream flow right already exists (9.63 mile instream flow right of 12 to 25 CFS granted to the Wyoming Game and Fish Department).

The Wyoming State Land and Farm Loan Office commented that they would like the BLM to analyze the acquisition of state land parcels that are intermingled with the BLM-administered public lands along the review segments of the North Fork of the Powder River and the Powder River at Cantonment Reno. Further, they questioned the need for a WSR designation to protect the outstandingly remarkable values on the BLM-administered public lands along the North Fork of the Powder River, Beartrap Creek, and the Powder River at Cantonment Reno review segments.

The Wyoming State Engineer's Office did not have any specific comments. They did state that any water rights holders should not be adversely affected by any WSR determinations or designations.

The Wyoming Public Service Commission requested that no unreasonable restrictions be placed on utility and pipeline facilities. They were more concerned about the BLM-administered public lands along the Powder River at Cantonment Reno than those along the other three waterway review segments.

Governor of Wyoming

Governor Mike Sullivan reiterated that it was his responsibility to communicate the official position of Wyoming state government regarding wild and scenic rivers. The Governor commented that the review segments along both the North Fork of the Powder River and Beartrap Creek were fairly representative of streams in the Big Horn Mountains and, therefore, should not meet either the WSR eligibility criteria or the suitability factors to be further considered for WSR designation. Further, he commented that the historic values of the Powder River at Cantonment Reno review segment could be protected by another authority rather than a WSR designation. The Governor did say that the BLM-administered public lands along the Middle Fork of the Powder River review segment would likely meet the suitability factors to be further considered for WSR designation and that the stream segment under review has already been protected by a Wyoming instream flow water right. The Governor also agreed with the Wyoming Water Development Commission that any WSR designation of BLM-administered public lands along the Middle Fork of the Powder River should correspond to the existing instream flow right.

RESULTS OF THE WILD AND SCENIC RIVERS SUITABILITY REVIEW OF BLM ADMINISTERED PUBLIC LANDS ALONG BEARTRAP CREEK, THE NORTH FORK OF THE POWDER RIVER, THE POWDER RIVER AT CANTONMENT RENO AND THE MIDDLE FORK OF THE POWDER RIVER

Beartrap Creek (including a short tributary segment of the North Fork of the Red Fork of the Powder River) - North Fork of the Powder River - Powder River at Cantonment Reno

The BLM has determined that the BLM-administered public lands along the review segments of all three of these waterways do not meet the WSR suitability factors and will be given no further consideration for inclusion in the WSR system. The nonsuitable determination is based on: 1) the potential conflicts with management and activities conducted on the adjacent (and up or downstream) private lands that BLM has no jurisdiction or control over; 2) there is absolutely no interest by adjacent landowners in cooperating or sharing costs of administration or joint management of the review segments under a WSR designation; 3) there is no public access to the BLM-administered public lands involved and no likelihood that it could be obtained; and, 4) there is complete opposition by adjacent landowners to managing their private land areas (within the review segments) in concert with a WSR designation on the interspersed BLM-administered public land parcels. The land and resource values on the BLM-administered public lands involved can and will continue to be appropriately managed under all other applicable BLM mandates and regulations for multiple use, sustained yield and environmental integrity, and should suffer no adverse effects for lack of a WSR designation.

Middle Fork of Powder River

The BLM has determined that the BLM-administered public lands along the review segment of the Middle Fork of the Powder River meet the WSR suitability factors and should be managed to maintain or enhance their outstandingly remarkable values for any possible future consideration for inclusion in the WSR system. The suitable determination is based on the uniqueness of the diverse BLM land resources and their regional and national significance, making them worthy of any future consideration for addition to the WSR system.

The outstanding scenic, fisheries, wildlife, historic, recreational, and cultural values associated with the BLM-administered public lands within the review segment make this a uniquely diverse waterway segment in the region. Within the review segment, fish populations and habitat are of particularly high value. The review segment is one of only two waterway segments in the entire Big Horn Mountain Range classified as a Class 1 fishery with both regional and national importance. Outlaw Cave, also located on BLM-administered public lands within the waterway review segment, is a nationally famous and

regionally important historical site.

Making up 85% of the lands along the review segment, the BLM-administered public lands are manageable by BLM under the provisions of the WSR Act. Other factors that complement and enhance this manageability include: 1) the existing public access to and along the review segment; 2) management consistency and compatibility with the 1.3 miles of the waterway (another 10% of the review segment) that is owned and administered by the Wyoming Game and Fish Department; 3) the existing State of Wyoming instream flow reservation for fisheries management through the review segment; and, 4) there are no anticipated conflicts with the management objectives on the intermingled private lands within the review segment (three short private land segments making up a total of about 0.6 miles, or 5%, of the review segment).

The concerns of the local landowners and general public for potential problems associated with potential increased visitor pressure in the area can be controlled and managed. The general management direction provisions for dealing with these concerns and for maintaining or enhancing the qualifying WSR resource values on the BLM-administered public lands within the review segment will be developed in the course of developing the Buffalo planning and management decisions document.

In keeping with the strong local opposition to the WSR concept in the planning area in general, and in keeping with the Wyoming BLM WSR policy statement (June 1993), the BLM will not make or escalate any recommendations for WSR designation of the BLM-administered public lands within the Middle Fork of the Powder River review segment. Future Congressional consideration for WSR designation could still occur should Congress decide to do so at its volition, if public opinion should change to support such consideration, or if such a recommendation to Congress should be sponsored and supported by Wyoming state government or some other appropriate entity. In the interim, perhaps indefinitely, the BLM will continue its existing management as described in this document. Under this management, wild and scenic river characteristics were, and will be, maintained.

TABLE C1

SUMMARY

WILD AND SCENIC RIVERS SUITABILITY REVIEW OF BLM-ADMINISTERED PUBLIC LANDS THAT MEET THE WSR ELIGIBILITY CRITERIA ALONG WATERWAYS IN THE BUFFALO RESOURCE AREA

October 14, 1994

RIVER/STREAM (WATERWAY) REVIEWED	DETERMINATION	RATIONALE
Beartrap Creek (and North Fork/Red Fork/Powder River tributary) North Fork of the Powder River Powder River at Cantonment Reno	BLM-administered public lands not suitable	Potential private land use conflicts and adverse affects due to a WSR designation on BLM-administered public lands; no potential for public access to BLM-administered public lands; not manageable by BLM as WSR segments; not worthy additions to WSR system.
Middle Fork of the Powder River	BLM-administered public lands suitable	Worthy addition to WSR system; limited land-ownership conflicts; limited potential use conflicts; manageable by BLM as WSR segments.