



United States Department of the Interior
Bureau of Land Management

Lewistown District Office

April 1996



FINAL SWEET GRASS HILLS AMENDMENT and ENVIRONMENTAL IMPACT STATEMENT



The Bureau of Land Management is responsible for the stewardship of our public lands. It is committed to manage, protect, and improve these lands in a manner to serve the needs of the American people for all times. Management is based on the principles of multiple use and sustained yield of our nation's resources within a framework of environmental responsibility and scientific technology. These resources include recreation; rangelands; timber; minerals; watershed; fish and wildlife; wilderness; air; and scenic, scientific, and cultural values.

BLM/MT/PL-96/007+1220



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Montana State Office
222 North 32nd Street
P.O. Box 36800
Billings, Montana 59107-6800



SGH 1616.83

April 1996

Dear Reader:

Enclosed is the proposed final Sweet Grass Hills Amendment and Environmental Impact Statement (EIS) to the West HiLine Resource Management Plan (RMP).

The final amendment/EIS presents a preferred alternative and three other alternatives for management of land tenure adjustment, off-road vehicle use, oil and gas leasing, and locatable mineral development for BLM land and minerals within the Sweet Grass Hills. The final amendment/EIS incorporates comments and suggestions made on the draft amendment/EIS during the public review period which began in February, 1995 and ended in May, 1995. Changes were made to the preferred alternative in the draft amendment/EIS including: all Federal minerals (19,765 acres) would be recommended for a 20 year withdrawal and all BLM land would remain in public ownership.

The resource management planning process includes an opportunity for administrative review via a plan protest to the BLM's Director. Any person who participated in the planning process and has an interest which is or may be adversely affected by the approval of an amendment to an RMP may protest such approval. Careful adherence to the following guidelines will assist in preparing a protest that will assure the greatest consideration to your point of view.

Only those persons or organizations who participated in the planning process may protest. A protesting party may raise only those issues which were commented on during the planning process. New issues may be raised at any time but should be directed to the Lewistown District for consideration in plan implementation, as potential plan amendments, or as otherwise appropriate.

The period for filing protests begins when the Environmental Protection Agency publishes in the *Federal Register* its Notice of Receipt of the final environmental impact statement containing the proposed plan amendment. The protest period extends for 30 days. There is no provision for any extension of time. To be considered "timely," your protest must be postmarked no later than the last day of the protest period. Also, although not a requirement, we suggest that you send your protest by certified mail, return receipt requested.

Protests must be filed in writing to:

Director (480)
Bureau of Land Management
Resource Planning Team
1849 C Street, N.W.
Washington, D.C. 20240

In order to be considered complete, your protest must contain, at a minimum, the following information:

1. The name, mailing address, telephone number and interest of the person filing the protest.
2. A statement of the issue or issues being protested.
3. A statement of the part or parts of the amendment being protested. To the extent possible, this should be done by reference to specific pages, paragraphs, sections, tables, maps, etc. included in the proposed amendment.
4. A copy of all documents addressing the issue or issues submitted during the planning process by the protesting party or an indication of the discussion date of the issue(s) for the record.
5. A concise statement explaining why the State Director's decision is believed to be incorrect. This is a critical part of your protest. Take care to document all relevant facts. As much as possible, reference or cite the planning documents, environmental analysis documents, available planning records (i.e., meeting minutes or summaries, correspondence, etc.). A protest which merely expresses disagreement with the Montana State Director's proposed decision, without any data will not provide us with the benefit of your information and insight. In this case, the Director's review will be based on the existing analysis and supporting data.

At the end of the 30-day protest period, the BLM may issue a Record of Decision, approving implementation of any portions of the proposed plan amendment not under protest. Approval will be withheld on any portion of the plan amendment under protest until the protest has been resolved.

We thank the individuals and organizations who participated in our planning process, helping us to prepare a plan amendment that will lead to more effective and efficient management of public lands and minerals in the Sweet Grass Hills. Your interest is appreciated.

Sincerely yours,

A handwritten signature in cursive script that reads "Larry E. Hamilton". The signature is written in black ink and is positioned above the printed name and title.

Larry E. Hamilton
State Director

FINAL
SWEET GRASS HILLS
RESOURCE MANAGEMENT PLAN AMENDMENT
and
ENVIRONMENTAL IMPACT STATEMENT

April 1996

Prepared by
United States Department of the Interior
Bureau of Land Management
Montana State Office
Lewistown District Office
Great Falls Resource Area

Prepared by: Richard L. Hopkins
Area Manager, Great Falls Resource Area

April 1996
Date

Recommended by: David L. Mari
District Manager, Lewistown

April 1996
Date

Approved by: Jamy E. Hamilton
State Director, Montana

April 1996
Date

FINAL
SWEET GRASS HILLS
RESOURCE MANAGEMENT PLAN AMENDMENT
AND
ENVIRONMENTAL IMPACT STATEMENT

ABSTRACT

This final amendment and environmental impact statement addresses future management options for land tenure adjustment, off-road vehicle use, oil and gas leasing, and locatable mineral development for lands and minerals administered by the Bureau of Land Management (BLM) in the Sweet Grass Hills in Toole and Liberty Counties, Montana, and amends the West HiLine Resource Management Plan (1988 and 1992). This includes approximately 7,717 surface acres, 19,765 acres of all mineral estate, and 1,644 acres of only oil and gas estate. These lands are administered by the BLM through the Great Falls Resource Area.

Through the West HiLine Resource Management Plan (RMP) the BLM, in January 1992, designated the Sweet Grass Hills Area of Critical Environmental Concern (ACEC) (7,580 acres). The Sweet Grass Hills are significant because of their importance as a religious and cultural use area for Native Americans; they are an integral part of the peregrine falcon reintroduction area; they contain high value recreational lands; and they support diverse wildlife

populations. Management direction under the West HiLine RMP included leaving the ACEC open to mineral entry with special management guidelines to ensure the orderly development of locatable minerals while protecting the ACEC resource values. A conflict between surface use and protecting resource values surfaced in February 1992 when Manhattan Minerals (US) Ltd. proposed to explore for locatable minerals in the Tootsie Creek drainage of East Butte in the Sweet Grass Hills.

The preferred alternative and three other alternatives have been developed to provide management options for resolving the issues relating to land tenure adjustment, off-road vehicle use, oil and gas leasing, and locatable mineral development. The four alternatives include Alternative A-Current Management (No Action); Alternative B-Maximum Resource Protection (Sweet Grass Hills study area); Alternative C-Preferred Alternative; and Alternative D-Resource Protection (Sweet Grass Hills Area of Critical Environmental Concern).

ACRONYMS

ACEC	Area of Critical Environmental Concern
AIRFA	American Indian Religious Freedom Act
APD	Application for Permit to Drill
ARD	Acid Rock Drainage
BLM	Bureau of Land Management
BR	Bureau of Reclamation
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DEQ	Department of Environmental Quality
DSL	Montana Department of State Lands
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ERC	Emergency Road Closure
F	Fahrenheit
FLPMA	Federal Land Policy and Management Act
FR	Federal Register
FY	Fiscal Year
IBLA	Interior Board of Land Appeals
MBMG	Montana Bureau of Mines and Geology
MCF	Thousand Cubic Feet
MDFWP	Montana Department of Fish, Wildlife and Parks
MEPA	Montana Environmental Policy Act
MOU	Memorandum of Understanding
MSU	Montana State University
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places
NSO	No Surface Occupancy
ORV	Off-Road Vehicle
PILT	Payment In Lieu of Taxes
RA	Resource Area
RFD	Reasonable Foreseeable Development
RMA	Recreation Management Area
RMP	Resource Management Plan
ROD	Record of Decision
ROW	Right-of-Way
SC	Specific Conductance
SFPM	Santa Fe Pacific Mining
SHPO	State Historic Preservation Office
SRMA	Special Recreation Management Area
TDS	Total Dissolved Solids
T&E	Threatened and Endangered
USDI	United States Department of the Interior
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VRM	Visual Resource Management

SUMMARY

PURPOSE

This final resource management plan amendment and environmental impact statement (EIS) addresses future management options for land tenure adjustment, off-road vehicle use, oil and gas leasing, and locatable mineral development for lands and minerals administered by the Bureau of Land Management (BLM) in the Sweet Grass Hills in Montana and amends the West HiLine Resource Management Plan (BLM, 1988b and 1992a). This includes approximately 7,717 surface acres, 19,765 acres of all mineral estate, and 1,644 acres of only oil and gas estate. The Sweet Grass Hills Area of Critical Environmental Concern (ACEC) (7,580 acres) is within the study area. The ACEC designation only applies to surface lands administered by the BLM. These lands are administered by the BLM through the Great Falls Resource Area and include public lands and minerals in the Sweet Grass Hills in Toole and Liberty Counties.

PLANNING ISSUES

Four issues were identified through resource monitoring and public participation during the scoping process; land tenure adjustment, off-road vehicle use, oil and gas leasing and development, and locatable mineral development. These issues reflect concerns or conflicts that exist with current management and are analyzed in this document along with alternative management prescriptions.

Land Tenure Adjustment

Some lands or interest in lands through conservation easements may serve the public if acquired and held in public ownership to meet the management goals for the Sweet Grass Hills. Expansion of the present Sweet Grass Hills ACEC may also be appropriate if the BLM acquires additional surface acreage.

Some BLM lands in the study area (137 acres) may meet disposal criteria since they do not contain significant resource values and were not designated as part of the Sweet Grass Hills ACEC. These lands could be used for exchanges to consolidate land holdings adjacent to the ACEC.

Off-Road Vehicle Use

Presently, BLM land in the Sweet Grass Hills ACEC is under an emergency road closure (ERC). This was done at the request of local landowners and sportsmen who felt off-road vehicle (ORV) use was causing resource damage and might lead to private lands being closed to hunting. Before the ERC this area was open to ORVs. The ORV management policy should be evaluated to determine if the ORV closure should include all BLM land in the study area and if any exceptions should apply to the closure.

Oil & Gas Leasing and Development

The Federal mineral estate in the Sweet Grass Hills is open to oil and gas leasing with standard stipulations and special stipulations for raptors. Oil and gas leasing should be reevaluated to determine whether or not it is compatible with protecting the resources in the Sweet Grass Hills. Existing decisions on oil and gas leasing will be reviewed through this amendment/EIS.

Locatable Mineral Development

Manhattan Minerals (US) Ltd. submitted a proposal to the BLM in February 1992 to perform exploration in the Tootsie Creek drainage of the East Butte in the Sweet Grass Hills. Through a series of public meetings in March 1993 the BLM concluded that exploration and any subsequent mining may not be compatible with the areas long-term management needs.

This amendment/EIS is the tool that will be used to make the BLM's recommendation to the Secretary of the Interior about whether or not the Sweet Grass Hills should be withdrawn from mining claim location. Issues associated with proposed management include addressing any valid existing property rights to unpatented claims within the Manhattan Minerals (US) Ltd. pending exploration proposal, and foreseeable development of federal or privately owned minerals within the Sweet Grass Hills. Impacts of reasonably foreseeable hardrock mineral activity to the affected resources will be analyzed based on a hypothetical mine scenario. However, it must be emphasized that this analysis is generic since no proposal for mining has been received or is imminent. Since, the magnitude of the hypothetical mine's impacts and the effectiveness of any mitiga-

tion depends on actual mine site location, they are only discussed in a general fashion to address cumulative impacts.

In addition to preparing the amendment/EIS, the BLM conducted a validity exam of existing claims in the East Butte area (14 claims). The results indicate eight of the claims meet the test of discovery under the mining law and are valid. Alternatives for the management of valid existing rights are considered. These include, allowing operations to continue, acquiring valid existing rights from a willing seller through purchase or exchange, or pursuing condemnation to obtain these properties.

THE ALTERNATIVES

The formulation and analysis of alternatives is required by the Council of Environmental Quality regulations for implementing the National Environmental Policy Act (40 CFR 1500.2(e)) and the BLM resource planning regulations (43 CFR 1610.4-5). Each alternative focuses on management options to resolve the issues.

Four alternatives were developed and analyzed in detail. The major management actions and environmental consequences of the four alternatives are summarized in Tables S.1 and S.2. These tables are summaries of the alternative descriptions contained in Chapter 2 and the environmental consequences described in Chapter 4. The reader is referred to the text in those chapters for specifics and more detail about the information in the summary tables.

**TABLE S.1
SUMMARY OF ALTERNATIVES**

Issue	Alternative A (Current Management)	Alternative B	Alternative C	(Preferred) Alternative D
Land Adjustment	<p>The BLM would concentrate land acquisition adjacent to the ACEC and surrounding areas with similar resource values.</p> <p>A total of 137 acres of public land would be available for disposal.</p>	<p>The BLM would concentrate land acquisition in areas with Federal subsurface in the study area.</p> <p>None of the public land within the study area would be available for disposal.</p>	<p>The BLM would concentrate land acquisition (surface and subsurface) in areas adjacent to the ACEC. All acquisitions would depend on a willing seller.</p> <p>None of the public land within the study area would be available for disposal.</p>	<p>The BLM would concentrate land acquisition (surface and subsurface) only in areas adjacent to the ACEC.</p> <p>A total of 137 acres of public land would be available for disposal.</p>
Off-Road Vehicle Use	<p>An emergency road closure would remain in effect for the ACEC (7,580 acres). Restricted motorized use would be available by permit only.</p> <p>BLM land outside the ACEC would be open to off-road vehicles (137 acres).</p>	<p>BLM land in the study area would be closed to all motorized vehicles with no exceptions (7,717 acres). However, administrative access is provided for under the terms of oil and gas leases.</p>	<p>The ACEC would be closed to off-road vehicles (7,580 acres). Off-road travel for administration of a Federal lease or permit would be granted, unless specifically prohibited.</p> <p>BLM land outside the ACEC would be open to off-road vehicles (137 acres).</p>	<p>The ACEC would be closed to off-road vehicles (7,580 acres). Off-road travel for administration of a Federal lease or permit would be granted, unless specifically prohibited.</p> <p>BLM land outside the ACEC would be open to off-road vehicles (137 acres).</p>
Oil & Gas Leasing	<p>The study area would be open to oil and gas leasing with standard stipulations and special raptor stipulations (21,409 acres).</p>	<p>The study area would be closed to future oil and gas leasing (21,409 acres). This would be a discretionary closure.</p>	<p>The study area would be open to oil and gas leasing with a no surface occupancy stipulation on 6,328 acres within the ACEC, 262 acres adjacent to the ACEC, and 160 acres in the Sage Creek area to protect municipal water wells. The remainder of the study area would be open with standard stipulations and special raptor stipulations (14,659 acres).</p>	<p>The ACEC (6,328 acres), along with 262 acres adjacent to the ACEC, and 160 acres in the Sage Creek area would only be available for oil and gas leasing with a no surface occupancy stipulation if Federal minerals are being drained by a state or fee well. The remainder of the study area would be open with standard stipulations and special raptor stipulations (14,659 acres).</p>

**TABLE S.1 (cont.)
SUMMARY OF ALTERNATIVES**

Issue	Alternative A (Current Management)	Alternative B	Alternative C (Preferred)	Alternative D
Locatable Minerals	<p>The study area would be open to locatable mineral entry with specific management guidelines (19,765 acres).</p> <p>A portion of the Bureau of Reclamation withdrawal for a rock riprap source would remain in effect (40 acres).</p>	<p>The BLM would recommend to the Secretary of the Interior that the Federal minerals in the study area (19,765 acres) be withdrawn from locatable mineral entry. The BLM would pursue relinquishment of any valid claims through purchase, exchange, condemnation, or conservation easements from private sources. The purchase or condemnation of valid claims would require Congressional approval.</p> <p>The BLM would recommend for termination the 572 acre Bureau of Reclamation withdrawal for a rock riprap source.</p>	<p>The BLM would recommend to the Secretary of the Interior that the Federal minerals in the study area (19,765 acres) be withdrawn from locatable mineral entry. The BLM would encourage holders of valid claims to relinquish their claims through purchase, exchange, or through conservation easements from private sources. The BLM would process Plans of Operations on valid claims consistent with Federal regulations (43 CFR 3809) to prevent unnecessary or undue degradation.</p> <p>The BLM would recommend for termination the 572 acre Bureau of Reclamation withdrawal for a rock riprap source.</p>	<p>The BLM would recommend to the Secretary of the Interior that the Federal minerals in the ACEC (6,328 acres), along with 262 acres adjacent to the ACEC and 160 acres in the Sage Creek area be withdrawn from locatable mineral entry. The BLM would pursue relinquishment of any valid claims through purchase, exchange, condemnation, or conservation easements from private sources. The purchase or condemnation of valid claims would require Congressional approval.</p> <p>The BLM would recommend for termination the 572 acre Bureau of Reclamation withdrawal for a rock riprap source.</p>
Management Common	Other management guidance for the study area (i.e., air quality, vegetation, access, recreation, livestock grazing, geophysical exploration etc.) was addressed in the West HiLine RMP (BLM, 1988a, 1988b, and 1992a).			

**TABLE S.2
SUMMARY OF ENVIRONMENTAL CONSEQUENCES**

Resource	Alternative A (Current Management)	Alternative B	Alternative C (Preferred)	Alternative D
Locatable Minerals	<p>Further hardrock exploration could result in more information about the mineral potential. Discovery of sufficient reserves could lead to underground or open-pit mining.</p> <p>Most of the high (94%) and all of the moderate occurrence potential Federal minerals would be available for locatable mineral exploration and development.</p>	<p>A withdrawal of 19,765 acres would preclude further exploration and potential development of Federal minerals. The 6,328 acres within the ACEC are rated high occurrence potential for precious metal resources.</p> <p>All of the high and moderate occurrence potential Federal minerals would not be available for mineral exploration and development.</p>	<p>A withdrawal of 19,765 acres could preclude further exploration and potential development of Federal minerals, most of which are high occurrence potential. However, in the event of valid mining claims, exploration could occur followed by underground or open-pit mining.</p> <p>All of the high and moderate occurrence potential Federal minerals, except valid claims (~100 acres), would not be available for mineral exploration and development.</p>	<p>A withdrawal of 6,750 acres would preclude further exploration and potential development of Federal minerals, most of which are high occurrence potential.</p> <p>Over half of the high (56%) occurrence potential Federal minerals would not be available for mineral exploration and development.</p>
<p>Likelihood of Additional Locatable Mineral Development</p> <ul style="list-style-type: none"> * Exploration * Mine (<1 to 10 million tons) 	<p>Very High</p> <p>Moderate</p>	<p>Low</p> <p>Very Low</p>	<p>High</p> <p>Low</p>	<p>Moderate</p> <p>Low</p>

**TABLE S.2 (cont.)
SUMMARY OF ENVIRONMENTAL CONSEQUENCES**

Resource	Alternative A (Current Management)	Alternative B	Alternative C (Preferred)	Alternative D
Oil and Gas	Presently, 13,156 out of 21,409 acres are leased for oil and gas. Current management would have no impact on future leasing or exploration and development. It is estimated that 20 wells may be drilled on Federal minerals with 6 completed as producers.	Designation of the entire study area (21,409 acres) as no lease would significantly reduce future oil and gas exploration and development. It is estimated that only 1 or 2 wells may be drilled on Federal minerals before existing leases expire. A potential loss of revenues could occur through drainage of Federal reserves.	A no surface occupancy stipulation on 6,750 acres for the ACEC could preclude drilling 1 or 2 wells on Federal minerals. For the remainder of the study area the impacts would be similar to Alternative A, except 18 or 19 Federal wells may be drilled. No potential loss of revenues from drainage of Federal reserves.	The impacts from a no lease restriction for oil and gas on 6,750 acres would be the same as Alternative C. A slight potential loss of revenues could occur through drainage of Federal reserves.
14 Federal Mineral Estate Subject To: * Standard or Special Stipulations * No Surface Occupancy * Closed to Leasing	21,409 acres 0 0	0 acres 0 21,409	14,659 acres 6,750 0	14,659 acres 0 6,750
Soils and Vegetation	The emergency road closure for 7,580 acres reduces the potential for soil compaction and erosion from ORV use in the ACEC.	Closing all public lands in the study area (7,717 acres) to ORV use would reduce any potential impacts to soils and vegetation.	Closing the ACEC (7,580 acres) to ORV use would reduce the potential for soil compaction and erosion.	The impacts from ORV use would be the same as Alternative C.

Twenty oil and gas wells could be drilled on Federal minerals with 60 acres of surface disturbance resulting in a loss of vegetation, soil compaction, and erosion.

Underground or open-pit mining could cause soil displacement, soil compaction, and loss of vegetation on 50 to 100 acres from constructing roads, mills, plants, pits, pads, and ponds.

A no lease restriction would reduce surface disturbance related to oil and gas activities. Before existing leases expire, up to 6 acres could be disturbed.

Full implementation of this alternative would reduce potential impacts to soils and vegetation from hardrock exploration and mining.

Once existing oil and gas leases expire, there would be no impacts within the ACEC from oil and gas activities. For the remainder of the study area, 18 oil and gas wells could be drilled on Federal minerals with 54 acres of surface disturbance resulting in soil compaction, erosion, and a temporary loss of vegetation.

The impacts from mining discussed in Alternative A could also occur under this alternative, however, the likelihood is low. The impacts would be limited to areas with Federal surface/private minerals (1,252 acres) and Federal minerals with valid claims (~100 acres).

Impacts from oil and gas would be the same as Alternative C.

The impacts from locatable minerals would be the same as Alternative B.

**TABLE S.2 (cont.)
SUMMARY OF ENVIRONMENTAL CONSEQUENCES**

Resource	Alternative A (Current Management)	Alternative B	Alternative C (Preferred)	Alternative D
Watershed	<p>Twenty oil and gas wells could be drilled on Federal minerals with 60 acres of surface disturbance resulting in a potential increase in erosion and sedimentation. The potential exists for fluids or gases to leak from the non-cemented portion of casing strings into fresh water zones through natural fracturing or faulting. Impacts are anticipated to be insignificant due to the application of stipulations and best management practices.</p> <p>Mining could impact surface and/or ground waters if a release of contaminants occurs from a spill, leak, or acid rock drainage. Mining in upper Tootsie Creek would alter the natural flow characteristics of the creek. Impacts could occur to flow, channel morphology, riparian vegetation, aquatic life, water quality, and recharge to down gradient wells, seeps, and springs.</p>	<p>Eliminating future oil and gas leasing in the study area (21,409 acres) would reduce potential erosion and sedimentation from exploration and production activities. Before existing leases expire, up to 6 acres could be disturbed. However, until existing leases expire, the impacts would be the same as Alternative A.</p> <p>Withdrawing the Federal mineral estate insures water resources would not be impacted by hardrock exploration and mining related activities.</p>	<p>A no surface occupancy stipulation for oil and gas leases in the ACEC (6,750 acres) would eliminate potential impacts to surface and/or ground waters. Cementing all the casing strings to the surface would minimize the potential of ground water contamination. However, until existing leases expire, the impacts would be the same as Alternative A.</p> <p>Impacts to water resources from exploration or mining could occur and would be similar to those discussed in Alternative A, however, the likelihood is low. The direct impacts would be limited to areas with Federal surface/private minerals (1,252 acres), private surface/private minerals, and Federal minerals with valid claims (~100 acres). Mining activities occurring on valid claims or private lands adjacent to the ACEC could result in indirect down gradient impacts.</p>	<p>The impacts from a no lease restriction for oil and gas in the ACEC (6,750 acres) would be the same as Alternative C.</p> <p>The impacts from locatable minerals would be the same as Alternative B.</p>

Wildlife

The emergency road closure (ERC) for 7,580 acres has allowed deer and elk harvest to occur as most lands are then available for walk-in hunting.

Oil and gas exploration and development would result in a loss of habitat and harassment from road, pad, facility, and pipeline construction associated with an estimated 20 wells drilled on Federal minerals. The greatest impacts would be to small animals that cannot displace to unoccupied habitat.

Impacts from hardrock exploration are short term and can be mitigated through timing windows. Mining would occur year round and critical periods could not be avoided. Impacts occur from habitat loss (50 to 100 acres), human and mechanical harassment, and animal loss.

Closing all public lands in the study area (7,717 acres) to ORV use would have the same effect as the ERC under Alternative A.

Some disturbance to wildlife and wildlife habitat could occur before existing oil and gas leases expire. After the existing leases expire there would be no impact to wildlife.

Withdrawing all Federal minerals from locatable mineral entry would eliminate potential impacts from hardrock exploration and mining.

Closing the ACEC (7,580 acres) to ORV use would have the same effect as the ERC under Alternative A.

A no surface occupancy stipulation for oil and gas leases in the ACEC (6,750 acres) would reduce disturbances from exploration or development. For the remainder of the study area, the impacts would be the same as Alternative A.

Impacts from exploration and mine development of valid claims and private minerals adjacent to the ACEC could occur under this alternative, however, the likelihood is low. The impacts would be the same as those discussed in Alternative A.

The impacts from ORV use would be the same as Alternative C.

The impacts from a no lease restriction for oil and gas in the ACEC (6,750 acres) would be the same as Alternative C.

The withdrawal of Federal minerals in the ACEC from locatable mineral entry along with acquiring private minerals and any valid mining claims would avoid potential impacts to wildlife. This impacts would be the same as Alternative B.

**TABLE S.2 (cont.)
SUMMARY OF ENVIRONMENTAL CONSEQUENCES**

Resource	Alternative A (Current Management)	Alternative B	Alternative C (Preferred)	Alternative D
Air Quality	<p>Oil and gas activities affecting air quality are primarily short term and very localized. Impacts include increased dust and particulate emissions associated with the construction of access roads and well pads.</p> <p>Hardrock exploration activities, such as road and trench construction, would release particulates (dust). Air quality impacts from mining activities would occur from the release of particulates during construction, operations (heavy equipment, material transport, vehicles) and reclamation.</p>	<p>Until existing oil and gas leases expire the impacts would be the same as Alternative A.</p> <p>A withdrawal of Federal minerals from locatable mineral entry, including completing all necessary acquisitions and easements, would prevent any impacts to air quality.</p>	<p>The impacts from oil and gas activities would be the same as Alternative A.</p> <p>The impacts from hardrock exploration and mining would be similar to those discussed in Alternative A, except they would be limited to areas with Federal surface/private minerals (1,252 acres) and Federal minerals with valid claims (~100 acres).</p>	<p>Until existing oil and gas leases expire within the ACEC the impacts would be the same as Alternative A.</p> <p>Impacts would be same for leases outside of the ACEC. The impacts from hardrock exploration and mining would be the same as those discussed in Alternative B.</p>
Recreation	<p>The emergency road closure (ERC) changes the recreation opportunities from motorized recreational use to non-motorized on 7,580 acres.</p> <p>There may be a slight inconvenience (noise, displacement) to hikers and hunters from oil and gas activities.</p>	<p>Closing all public lands in the study area (7,717 acres) to ORV use changes the recreation opportunities from motorized recreational use to non-motorized.</p> <p>No future oil and gas leasing in the study area would eliminate potential impacts to the recreationist.</p>	<p>Closing the ACEC (7,580 acres) to ORV use would have the same effect as the ERC under Alternative A.</p> <p>There would be no impact to recreation from oil and gas leasing with a no surface occupancy stipulation. However, until existing leases expire, the impacts would be similar to Alternative A.</p>	<p>The impacts from ORV use would be the same as Alternative C.</p> <p>The impacts from a no lease restriction for oil and gas in the ACEC (6,750 acres) would be the same as Alternative C.</p>

Exploration and mining activities would reduce the opportunities for hiking and hunting because of increased traffic, noise, and road building.	Withdrawing Federal minerals would prevent any potential impacts to recreation.	The impacts would be similar to those discussed in Alternative A, except they would be limited to areas with Federal surface/private minerals (1,252 acres) and Federal minerals with valid claims (~100 acres).	The impacts from locatable mineral development would be the same as Alternative B.
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Lands	Rights-of-way for roads, pipelines, and power lines would be issued for oil and gas activities.	After existing oil and gas leases expire in the study area, no rights-of-way would be issued for oil and gas activities on 21,409 acres.	After existing oil and gas leases expire in the ACEC, no right-of-ways would be issued for oil and gas activities on 6,750 acres.	The impacts from oil and gas would be the same as Alternative C.
	Rights-of-way would be issued for the mining claim holder to develop the mineral potential.	No right-of-ways across BLM land would be issued for the purpose of developing the mineral estate in the study area.	Right-of-ways across BLM land would be issued for the purpose of developing the private mineral estate or valid claims.	The impacts from locatable minerals would be the same as Alternative B.

Cultural	The emergency road closure (ERC) prevents audio and visual intrusions for those participating in traditional Native American spiritual practices.	Closing all public lands in the study area (7,717 acres) to ORV use would have the same effect as the ERC under Alternative A.	Closing the ACEC (7,580 acres) to ORV use would have the same effect as the ERC under Alternative A.	Impacts from ORV use would be the same as Alternative C.
	Mechanical noise and visual intrusions from oil and gas activities have the potential to impact those participating in traditional Native American spiritual practices. These activities could also disturb and/or destroy cultural sites.	Not issuing future oil and gas leases would eliminate the potential for impacts from oil and gas activities. However, until the existing leases expire, the impacts would be the same as Alternative A.	Applying a no surface occupancy stipulation for the ACEC would eliminate the potential for impacts from oil and gas activities. For the remainder of the study area, the impacts would be the same as Alternative A.	The impacts from a no lease restriction for oil and gas in the ACEC (6,750 acres) would be the same as Alternative C.

**TABLE S.2 (cont.)
SUMMARY OF ENVIRONMENTAL CONSEQUENCES**

Resource	Alternative A (Current Management)	Alternative B	Alternative C (Preferred)	Alternative D
Cultural (continued)	Cultural resources (traditional spiritual practices) could be impacted by mechanical noise and visual intrusions from locatable mineral development. A mining operation within Tootsie Creek basin could result in the permanent loss of the traditional Native American spiritual practices associated with this area.	A withdrawal of Federal minerals would prevent any potential negative impacts to cultural sites or traditional Native American spiritual practices from locatable mineral activities.	On valid claims, the potential impacts would be the same as Alternative A. However, the impacts would be limited to areas with Federal surface/private minerals (1,252 acres) and Federal minerals with valid claims (~100 acres).	Impacts from locatable minerals would be the same as Alternative B.
Social	<p>The loss of 7,580 acres open to ORV use has a negative effect on the social well-being of motorized recreational users.</p> <p>The social well-being would improve for individuals who benefit through employment opportunities from oil and gas activities.</p> <p>Hardrock exploration and development could impact population, infrastructure, social organization, and social well-being through people in-migrating for employment and increased business activity.</p>	<p>The impact from ORV use would be similar to Alternative A, except the closure with no exceptions would cause an inconvenience for permittees.</p> <p>Until the existing leases expire, the impacts from oil and gas would be the same as Alternative A.</p> <p>Individuals and groups concerned about mineral exploration and development would feel their concerns were being addressed.</p>	<p>The impacts from ORV use would be the same as Alternative A.</p> <p>The impacts from oil and gas would be the same as Alternative A.</p> <p>The impacts would be similar to those discussed in Alternative A, since mining activity could occur on adjacent private minerals or on valid claims. However, the likelihood is low.</p>	<p>The impacts from ORV use would be the same as Alternative A.</p> <p>The impacts from oil and gas would be the same as Alternative A.</p> <p>The impacts would be the same as Alternative B.</p>

Economic

The study area would remain open to oil and gas leasing. Total economic activity could be \$1.9 million, supporting 14 jobs.

Mining operations would have an impact on the area's employment, population, economic activity, and tax revenues, during both construction and production phases. Exploration activity could increase total economic activity by an estimated \$340,000. The estimated total increase in economic activity could be \$4.9 million for an open-pit mine and \$6.1 million for an underground mine.

Eliminating future oil and gas leasing could result in the loss of 18 wells or 30% of the oil and gas activity projected for the study area. Potential Federal receipts from leasing, \$32,000 annually, could be foregone.

The potential impacts from exploration and mining would not occur with a withdrawal of Federal minerals. To acquire any valid mining claims the BLM, through Congressional approval, would incur the cost at fair market value.

A no surface occupancy stipulation for the ACEC could result in the loss of 1 or 2 wells or up to 3% of the oil and gas activity projected for the study area. Total economic activity could be 2 to 4% less as compared to Alternative A.

The impacts from locatable minerals would be similar to Alternative A, except exploration and development would be limited to areas with Federal surface/private minerals (1,252 acres) and Federal minerals with valid claims (~100 acres).

The impacts of a no lease restriction for oil and gas in the ACEC (6,750 acres) would be the same as Alternative C.

The impacts from locatable minerals would be the same as Alternative B.

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CHAPTER 1 - PURPOSE AND NEED

INTRODUCTION

This final amendment and environmental impact statement (EIS) was prepared under the Federal Land Policy and Management Act (FLPMA) of 1976, the Bureau of Land Management (BLM) planning regulations in the Code of Federal Regulations, and the Council on Environmental Quality regulations for implementing the National Environmental Policy Act (NEPA) of 1969.

LOCATION OF THE PLANNING AREA

The Sweet Grass Hills study area is located in northern Montana adjacent to the Canadian border. West and Middle Buttes of the Sweet Grass Hills are located in northern Toole County and East Butte is in northern Liberty County (Figure 1). The study area contains 68,605 acres, of which 7,717 surface acres (11%), 19,765 acres of all mineral estate (29%), and 1,644 acres of only oil and gas estate (2%) are administered by the BLM (Table 1.1).

The Sweet Grass Hills Area of Critical Environmental Concern (ACEC) (7,580 acres) is within the study area which is comprised of West Butte (2,592 acres), Middle Butte (666 acres), and East Butte (4,322 acres). The ACEC designation only applies to surface lands administered by the BLM.

BACKGROUND

The West HiLine Resource Management Plan (RMP) addressed the BLM administered lands in the Sweet Grass Hills. A Record of Decision (ROD) for those lands within the study area but outside the Sweet Grass Hills ACEC was issued in 1988. In 1992, a ROD pertaining to the Sweet Grass Hills ACEC was issued which formally designated the Federal surface an ACEC with special management prescriptions. The Sweet Grass Hills are significant because of their importance as a religious and cultural use area for Native Americans; they are an integral part of the peregrine falcon reintroduction area; they contain high value recreational lands; and they support diverse wildlife populations. The main goal of the Sweet Grass Hills ACEC

TABLE 1.1

SURFACE OWNERSHIP IN THE STUDY AREA (Acres)

	Federal		Private/State		Total
West Butte	2,606*	16%	14,087	84%	16,693
Middle Butte	803	5%	15,215	95%	16,018
East Butte	4,322**	12%	31,572	88%	35,894
Total	7,731	11%	60,874	89%	68,605

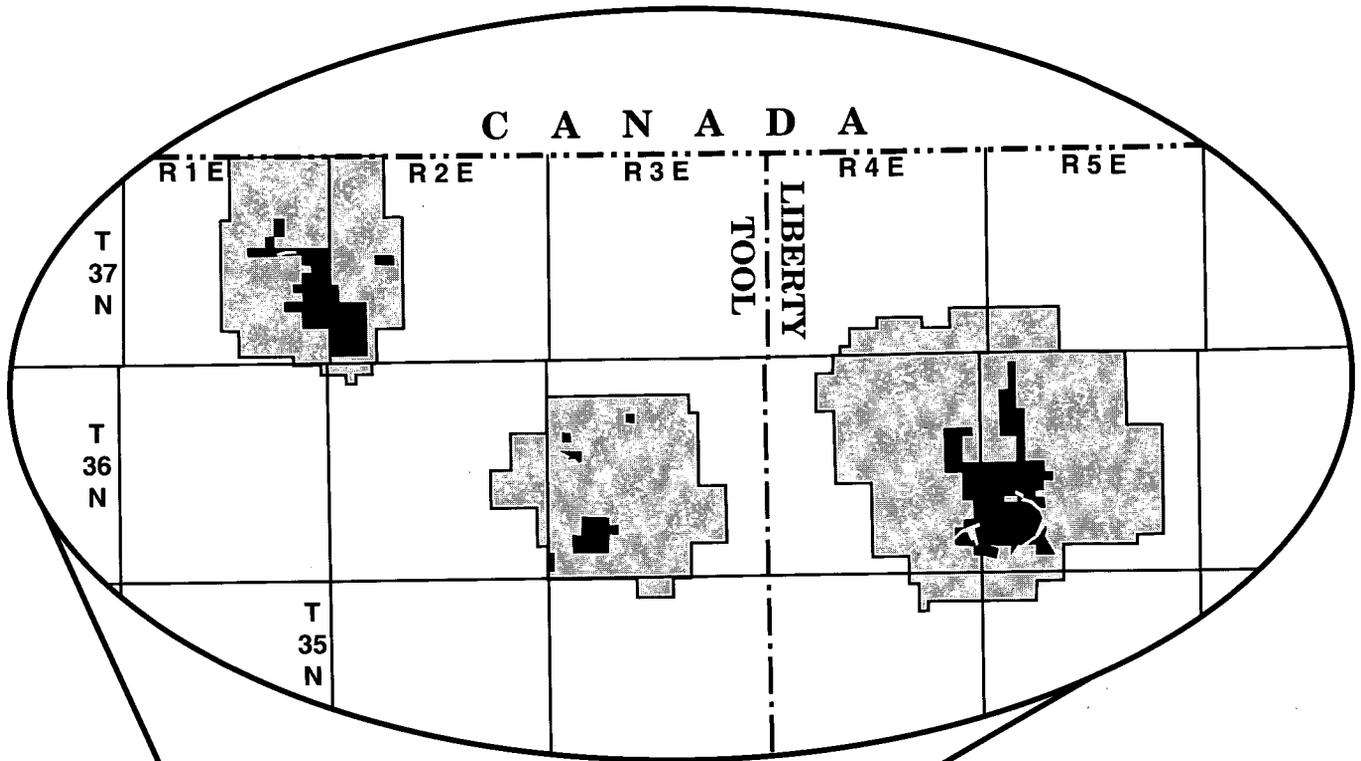
SUBSURFACE OWNERSHIP IN THE STUDY AREA (Acres)

	Federal All Minerals		Federal Only Oil/Gas		Private/State		Total
West Butte	7,176*	43%	0	0%	9,517	57%	16,693
Middle Butte	4,961	31%	200	1%	10,857	68%	16,018
East Butte	7,628**	21%	1,444	4%	26,822	75%	35,894
Total	19,765	29%	1,644	2%	47,196	69%	68,605

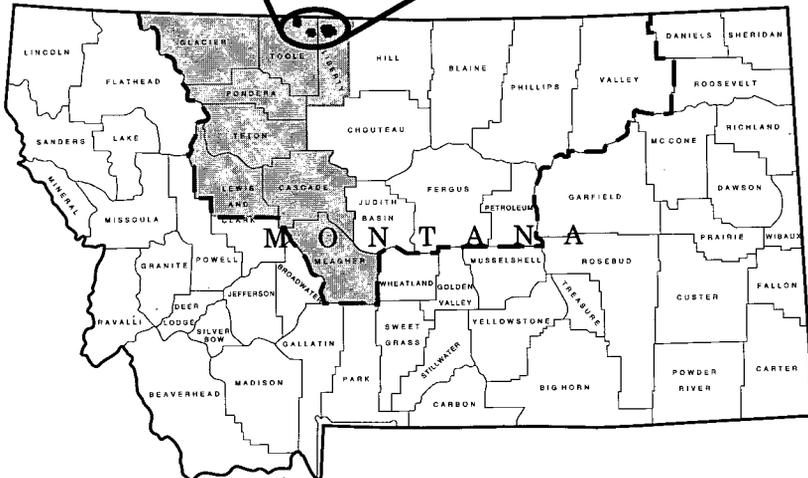
*14 acres are withdrawn to the International Boundary Commission United States and Canada and are not administered by the BLM.

**572 acres are withdrawn to the Bureau of Reclamation and are not administered by the BLM.

Figure 1



- BLM Surface
- ▨ Study Area



- ▨ Great Falls Resource Area
- Sweet Grass Hills Study Area
- - - Lewistown District Boundary



LOCATION MAP

is to protect areas of traditional spiritual importance to Native Americans, protect high value potential habitat for reintroduction of endangered peregrine falcons, and protect seasonally important elk and deer habitat.

The Sweet Grass Hills have a history of prospecting and mining for gold, silver, iron, and fluorite. Current economic interest is focused on gold-lode deposits as opposed to the historic placer mining that occurred in portions of East and Middle Buttes. Most recently, interest in mineral exploration has been in the Tootsie Creek drainage of East Butte. The principal claim holder in this area, E.K. Lehmann and Associates of Montana, Inc., has entered into joint ventures with three different companies.

In June 1986, Santa Fe Pacific Mining (SFPM) was authorized to construct approximately 14,000 feet of access road and drill six in-road sites in the Tootsie Creek drainage of East Butte. The Blackfeet Tribe filed an appeal of the approval with the Interior Board of Land Appeals (IBLA). Filing the appeal did not stay the decision and work on the project began in July 1986. In July 1988, IBLA ruled on the Blackfeet Tribe appeal. The board's decision (103 IBLA 228) affirmed BLM acted properly in approving the Plan of Operations and returned the case to BLM jurisdiction.

In 1989, Cominco American Resources, Inc. of Spokane, Washington, received approval to construct 2,600 feet of access road and drill nine in-road sites in the Tootsie Creek drainage of East Butte. This approval was appealed by the Original Chippewa Cree to IBLA along with a request for a stay of the action. IBLA denied the stay request and Cominco eventually constructed 2,000 feet of access road and drilled three of the proposed locations during 1989. During 1990, SFPM and Cominco recontoured and reseeded all areas disturbed by exploration activities. IBLA dismissed the Original Chippewa Cree appeal as moot in January 1992. This was because the project had already been constructed and reclaimed.

In February 1992, the BLM and Montana Department of State Lands (DSL) received a proposal from Manhattan Minerals (US) Ltd. to conduct exploration activity in the same general area as SFPM and Cominco. In July 1992, the BLM issued a decision record on the Manhattan proposal based on the results of an environmental assessment (EA). The decision was to withhold approval of the Manhattan Plan of Operations until completion of an EIS due to the potential for significant impacts to Native American traditional cultural, spiritual, and historical resources. A draft EIS was released to the public in February 1993, and public meetings were held in Chester, Browning, and Rocky Boy, Montana in March 1993 (BLM, 1993a). During these public meetings the protection of the areas traditional spiritual importance to Native Americans and aquifers in

the area that supply potable water to local residents, and are recharged in the Sweet Grass Hills, were the two issues of primary concern. A concern was also expressed that such exploration would lead to open-pit mining and cyanide leaching for gold similar to activity witnessed elsewhere in Montana. The public suggested that no means of mitigation would adequately protect these resources from the impacts of mineral exploration or mining.

Because of the comments received, the BLM decided to take another look at management for the Sweet Grass Hills. Analysis of these public comments led the BLM to question whether a decision made in the West HiLine RMP was in the best interest of the needs of the affected public. Allowing mining while attempting to protect resources for which the Sweet Grass Hills ACEC was designated may not be feasible. Therefore, on August 3, 1993, the BLM segregated 19,764.74 acres of Federal mineral estate from locatable mineral entry for two years in the three buttes of the Sweet Grass Hills so that this decision could be further studied and amended if that was shown to be necessary (Map 1 located in the back of this document).

On August 9, 1993, the BLM notified Manhattan Minerals (US) Ltd. and Mr. Ernest K. Lehmann that their project area in East Butte had been segregated from mineral entry for two years and that processing of their proposed exploration plan was suspended until the claim validity could be verified and long-term management of the Sweet Grass Hills could be reevaluated in a plan amendment to the West HiLine RMP.

Following the segregation, the BLM began meeting with the many interested publics to identify concerns which should be addressed in an amendment/EIS. This process indicated that land tenure adjustment, off-road vehicle use, oil and gas leasing, and locatable mineral development were issues that needed to be addressed. Particular concern was again raised over protection of areas of traditional spiritual importance to Native Americans and protection of potable water sources.

After several delays to consider additional public information, the draft Sweet Grass Hills amendment/EIS was released to the public on February 8, 1995. At that time it was anticipated that it would probably be February 1996, well after the August 2, 1995 conclusion of the two year segregation, before the final Sweet Grass Hills amendment/EIS could be completed. Thus, the BLM prepared an amendment/EA addressing only the mineral withdrawal in the Sweet Grass Hills which would prevent the filing of additional mining claims while the EIS process continued. The amendment/EA was released to the public on May 11, 1995 for a 30 day protest period ending on June 16, 1995. The BLM received a protest on the amendment/EA on June

14, 1995. Based on a review of the amendment/EA, the BLM Director determined that the EA was not sufficient to support the Montana State Director's decision, because it did not consider all relevant alternatives and the agency was analyzing long term management strategies in an ongoing EIS. Accordingly, the Director overruled the State Director's decision and the protest was declared to be moot and dismissed.

In July 1995, Congressman Pat Williams introduced legislation to protect the Sweet Grass Hills (H.R. 2074). In aid of that legislation, Assistant Secretary Armstrong, on July 24, 1995, approved a petition to file an application withdrawing the lands from location and entry under the mining laws. Notice of this action appeared in the *Federal Register* edition of July 28, 1995. Consequently, subject to valid existing rights, the Sweet Grass Hills were segregated from location under the mining laws for a period of up to two years, while the application for the proposed withdrawal in aid of legislation is being processed.

Through this RMP amendment/EIS process the BLM will recommend to the Secretary of the Interior those areas in the Sweet Grass Hills that should be withdrawn, if necessary, to protect areas of traditional spiritual importance to Native Americans, aquifers that provide potable water to local residents, potential habitat for reintroduction of endangered peregrine falcons, and seasonally important elk and deer habitat.

ISSUES

The BLM has identified the following issues requiring management direction to further protect resources in the Sweet Grass Hills.

Land Tenure Adjustment

Some lands or interest in lands through conservation easements may serve the public if acquired and held in public ownership to meet the management goals for the Sweet Grass Hills. Expansion of the present Sweet Grass Hills Area of Critical Environmental Concern (ACEC) may also be appropriate if the BLM acquires additional surface acreage.

Some BLM lands in the study area (137 acres) may meet disposal criteria since they do not contain significant resource values and were not designated as part of the Sweet Grass Hills ACEC. These lands could be used for exchanges to consolidate land holdings adjacent to the ACEC.

Off-Road Vehicle Use

Presently, BLM land in the Sweet Grass Hills ACEC is under an emergency road closure (ERC). This was done at the request of local landowners and sportsmen who felt off-road vehicle (ORV) use was causing resource damage and might lead to private lands being closed to hunting. Before the ERC this area was open to ORVs. The ORV management policy should be evaluated to determine if the ORV closure should include all BLM land in the study area and if any exceptions should apply to the closure.

Oil & Gas Leasing and Development

The Federal mineral estate in the Sweet Grass Hills is open to oil and gas leasing with standard stipulations and special stipulations for raptors (Appendix B, Attachments B.1 and B.2). Oil and gas leasing should be reevaluated to determine whether or not it is compatible with protecting the resources in the Sweet Grass Hills. Existing decisions on oil and gas leasing will be reviewed through this amendment/EIS.

Locatable Mineral Development

Manhattan Minerals (US) Ltd. submitted a proposal to the BLM in February 1992 to perform exploration in the Tootsie Creek drainage of the East Butte in the Sweet Grass Hills. Through a series of public meetings in March 1993 the BLM concluded that exploration and any subsequent mining may not be compatible with the areas long-term management needs.

This amendment/EIS is the tool that will be used to make the BLM's recommendation to the Secretary of the Interior about whether or not the Sweet Grass Hills should be withdrawn from mining claim location. Issues associated with proposed management include addressing any valid existing property rights to unpatented claims within the Manhattan Minerals (US) Ltd. pending exploration proposal, and foreseeable development of federal or privately owned minerals within the Sweet Grass Hills. Impacts of reasonably foreseeable hardrock mineral activity to the affected resources will be analyzed based on a hypothetical mine scenario. However, it must be emphasized that this analysis is generic since no proposal for mining has been received or is imminent. Since, the magnitude of the hypothetical mine's impacts and the effectiveness of any mitigation depends on actual mine site location, they are only discussed in a general fashion to address cumulative impacts.

In addition to preparing the amendment/EIS, the BLM conducted a validity exam of existing claims in the East Butte area (14 claims). The results indicate eight of the

claims meet the test of discovery under the mining law and are valid (Figure 2). Alternatives for the management of valid existing rights are considered. These include, allowing operations to continue until the claimant relinquishes the claims, acquiring valid existing rights on a willing seller basis through purchase or exchange, or pursuing condemnation to obtain these properties.

ISSUES NOT ADDRESSED

Several management concerns were considered, during the initial scoping process, but were concerns which can be resolved with existing management guidance or are beyond the scope of this document and are not considered issues in this amendment. These management concerns included; rights-of-way, recreation, livestock grazing, access, and designation of the Sweet Grass Hills as a Historic District. These resources will be managed consistent with the West HiLine RMP (BLM, 1988b and 1992a).

PLANNING CRITERIA

Planning criteria guide the amendment by focusing efforts and providing direction and identifying legal, policy, or regulatory constraints that direct or limit the BLM's ability to resolve issues. These criteria may change in response to public comment and coordination with state or local governments and other federal agencies. General criteria were developed to guide this amendment.

The alternatives will only analyze those issues requiring management resolution. Other management guidance is addressed in the West HiLine RMP.

To the greatest extent possible the plan will not conflict with tribal, local, county, state, and other federal agency plans. The BLM relied on a review process by other agencies and tribal governments for assistance in determining consistency with their plans.

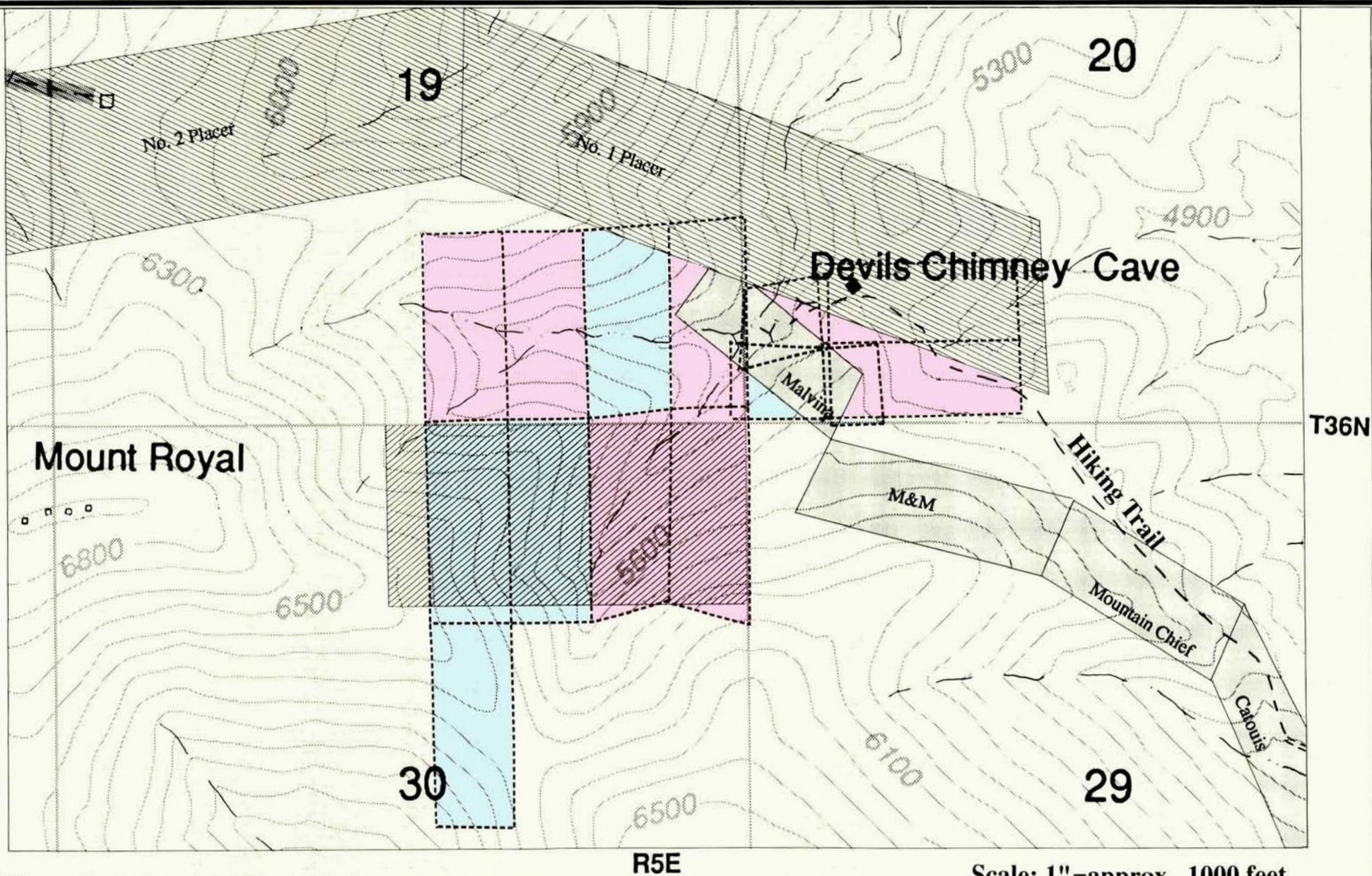
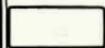
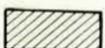
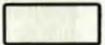


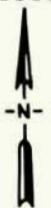
Figure 2: Mining Claims in the Tootsie Creek Area

Scale: 1"=approx. 1000 feet

Legend

- | | |
|---|--|
|  BLM Surface/Federal Minerals |  Private Surface/Federal Minerals |
|  BLM Surface/Private Minerals |  Private Surface/Private Minerals |

- Unpatented Mining Claims
-  Valid
 -  Invalid



CHAPTER 2 - ALTERNATIVES

INTRODUCTION

This chapter presents four alternatives to address the issues described in Chapter 1; land tenure adjustment, off-road vehicle use, oil and gas leasing and development, and locatable mineral development. These issues reflect resource concerns or conflicts which could be partially or totally resolved through this amendment. This amendment/EIS only addresses changes in management from the West HiLine RMP that pertain to the above issues.

Other management guidance for the study area (i.e. air quality, vegetation, access, recreation, livestock grazing, geophysical exploration, etc.) can be found in the West HiLine Resource Management Plan (RMP) (BLM, 1988a, 1988b, and 1992a). This includes the following specific management guidance for the Sweet Grass Hills Area of Critical Environmental Concern (ACEC):

Native American tribes who utilize the area will be consulted prior to surface disturbing activities which require BLM approval. This consultation will provide guidance in applying restrictions or mitigating measures where there may be impacts to traditional cultural values.

The ACEC is an avoidance area for rights-of-way. No communication sites can be permitted on the West or Middle Buttes.

The BLM will continue to monitor the ACEC's wildlife habitat values to ensure that management goals and objectives are met. Livestock allotment management plans in the ACEC will emphasize the maintenance and/or improvement of important wildlife winter habitat. This may be accomplished through season-of-use modification, pasture modification, temporary exclosures, etc.

The potential to sell forest products from the Sweet Grass Hills will be determined in an activity plan for this ACEC. Forest product disposal under the activity plan will conform to other resource restrictions. Only minor forest products may be sold pending completion of the activity plan.

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

While establishment of a National Register Historic District is an issue in the Sweet Grass Hills study area, this amendment and environmental impact statement (EIS) is not the process or method for resolution of this issue. Final determination on a Historic District must be made by the Keeper of the National Register of the National Park Service.

ALTERNATIVE A - CURRENT MANAGEMENT

Current management is described in the Management Common to All Alternatives, and the Preferred Alternative sections of the West HiLine RMP (BLM, 1988a). Current decisions from the West HiLine RMP relating to the Sweet Grass Hills study area were approved in a Record of Decision (ROD) issued in September, 1988. Management direction specific to most of the Federal surface in the study area (the Sweet Grass Hills ACEC, 7,580 acres) was approved in an ROD issued in January, 1992. With implementation of this alternative the foreseeable hardrock or oil and gas exploration and development described in Appendices A and B could occur on either Federal minerals, private minerals, or most likely a combination of Federal and private minerals.

Land Tenure Adjustment

The BLM would consolidate public holdings in areas containing high value resources. A total of 137 acres of BLM land would be available for disposal, with emphasis on exchange.

The management objective for disposing of the 137 acres would be to concentrate acquisition in the Sweet Grass Hills ACEC and surrounding areas with similar values. Lands identified for disposal outside the study area could be used for exchanges within the study area. ACEC boundary changes, necessitated by land acquisition, would occur to

clearly define the emphasis area limits. Acquired lands would be placed under the guidance found in the West HiLine RMP (BLM, 1988a, 1988b, and 1992a).

All acquisitions would depend on a willing seller, unless the public interest determination indicates the use of eminent domain authority is appropriate.

Off-Road Vehicle Use

The BLM would provide for public off-road vehicle (ORV) use while protecting resource values and providing for public safety. The area outside of the Sweet Grass Hills ACEC but within the study area is open to ORV use (137 acres).

An Emergency Road Closure (ERC) would remain in effect for the Sweet Grass Hills ACEC (7,580 acres). The BLM land in this area would remain closed year round to all motorized off-road vehicles until an activity plan is complete. An activity plan would designate roads and trails open to motorized vehicle use, if any. Restricted motorized use is available by permit only during this ERC to livestock ranchers with leases, selected governmental actions, etc.

Oil & Gas Leasing and Development

The Sweet Grass Hills would remain open to oil and gas leasing. The standard stipulations in Appendix B, Attachment B.1, would be applied to all oil and gas leases issued. Special raptor stipulations may be required for raptor habitats in the study area. In all cases, the stipulations prescribed for federal mineral development, in split estate situations, apply only to the development of the Federal minerals. These stipulations do not dictate surface management. The mitigation measures present no restrictions on surface activities conducted for purposes other than those resulting from mineral development activities which are permitted, licensed, or otherwise approved by the BLM.

Within the Sweet Grass Hills ACEC, the Rocky Mountain Front Raptor Guidelines (Appendix B, Attachment B.2) would be used to develop site specific direction for activities in occupied raptor habitat. The BLM would coordinate with oil and gas lessees to apply guidelines to any new activity on existing oil and gas leases which threaten to disrupt reproduction of threatened and endangered (T&E) or sensitive raptor species using the area. These guidelines would be used to implement special stipulations for all new oil and gas leases in raptor habitat, if warranted by resource information, and may be waived by the authorized officer.

Locatable Mineral Development

Surface management of locatable mineral development on BLM land outside the Sweet Grass Hills ACEC (137 acres) would be guided by the 43 CFR 3809 regulations and the Memorandum of Understanding (MOU) between the Montana Department of Environmental Quality (DEQ) (formally the Department of State Lands) and BLM. Disturbance exceeding the casual use level, (usually involving mechanized equipment) but less than 5 acres may proceed 15 days after a Notice is filed with the BLM Lewistown District Office. Disturbances greater than 5 acres require filing a Plan of Operations and receiving approval before work can begin.

A Plan of Operations must always be filed, regardless of disturbance acreage, and formal approval received from the BLM prior to surface disturbance in the Sweet Grass Hills ACEC. In this area the MOU with DEQ does not apply and the BLM is responsible for developing mitigating measures and plan approval.

Once a Plan of Operations is filed with the BLM, the proposed action would be analyzed (with DEQ, where appropriate) and the mitigating measures needed to prevent unnecessary or undue degradation would become conditions of approval. Plans of Operation are federal actions that require authorization. The public may review and comment on these specific plans. For operations covered by the MOU with the DEQ, formal approval is granted by the DEQ with BLM concurrence.

Access across Federal surface to mining claims is an implied right under the mining laws, but may be conditioned to prevent unnecessary or undue degradation.

To ensure the orderly development of locatable mineral resources while protecting the Sweet Grass Hills ACEC values, the following management guidelines would apply to the ACEC:

- (a) The ACEC would remain open to mineral entry.
- (b) An approved Plan of Operations would be required for all activities (43 CFR 3809.1-4(b)) exceeding casual use (as defined in 43 CFR 3809.1-2). "Operations" includes all activity associated with exploration, assessment work, development and processing of mineral deposits located under the mining laws.
- (c) To ensure adequate rehabilitation, bonding would be required for all operations, except casual use (43 CFR 3809.1-9).

(d) The following reclamation guidance would be applied to Plans of Operation. This guidance has been developed from 43 CFR 3809.1-3 and 43 CFR 3809.1-5 to prevent unnecessary or undue degradation of ACEC values:

- Rehabilitation measures would consider the replacement of disturbed elk and mule deer habitat.
- Timing restrictions may be applied on an individual basis to prevent unnecessary or undue degradation to accommodate mineral operations while protecting important wildlife habitat.
- Mineral operations located in crucial wildlife habitat may be required to rehabilitate previous disturbances prior to initiating new surface disturbing activities to keep disturbed acreage to a minimum. This would provide for continued mineral operations while rehabilitating important wildlife habitat at the earliest possible opportunity.

The BLM has reviewed the East Butte, Bureau of Reclamation (BR) withdrawal (572 acres) and recommended that 40 acres of the withdrawal be retained and the remaining 532 acres be returned to BLM administration. The withdrawal was originally granted as a rock riprap source for BR projects. The 40 acres required by BR are adjacent to the existing quarry and provide for future riprap reserves. The area revoked from withdrawal would be opened to mineral entry.

ALTERNATIVE B

Through Alternative B, the BLM would protect areas of traditional spiritual importance to Native Americans and aquifers in the East Butte area that provide potable water to local residents. The BLM would designate all Federal surface in the study area (7,717 acres) an ACEC. With implementation of this alternative the foreseeable hardrock exploration and development described in Appendix A is assumed not to occur.

Land Tenure Adjustment

The BLM would consolidate public holdings (surface and subsurface) in the study area by emphasizing exchange for BLM lands outside the study area, purchase, or conservation easements. None of the BLM land in the study area would be available for disposal.

The management objective would concentrate acquisition in areas with Federal subsurface in the Sweet Grass Hills

study area. All acquisitions would depend on a willing seller, unless the public interest determination indicates the use of eminent domain authority is appropriate.

Some important acquisitions would require that both subsurface and surface be acquired. Areas identified as high priority include the mineral estate of patented mining claims adjacent to the ACEC and lands in the vicinity of Devils Chimney Cave.

The Sweet Grass Hills ACEC boundary would be adjusted to include acquired lands. These lands would be placed under the guidance in this amendment and the West HiLine RMP (BLM, 1988a, 1988b, and 1992a).

Off-Road Vehicle Use

The BLM land in the study area would be closed year-round to all motorized vehicle use (7,717 acres) with no exceptions allowed. However, administrative access is provided for under the terms of oil and gas leases.

Oil & Gas Leasing and Development

The BLM would not issue future oil and gas leases in the study area (21,409 acres). When existing oil and gas leases expire they would not be offered for lease again. On existing leases, the BLM would work with operators to apply guidelines to any new activity which may threaten to disrupt T&E or sensitive raptor species. The Rocky Mountain Front Raptor Guidelines (Appendix B, Attachment B.2) would be used for site specific direction for activities proposed in raptor habitats.

Locatable Mineral Development

The BLM would file a petition with the Secretary of the Interior that the Federal minerals in the Sweet Grass Hills study area (19,765 acres) be withdrawn from locatable mineral entry for a 20-year term. The withdrawal would be subject to valid existing rights. Validity exams of existing claims in the East Butte area (14 claims) have been conducted to determine valid existing property rights. The results indicate eight of the claims meet the test of discovery under the mining law and are valid (Figure 2). Validity exams of existing claims in the Middle Butte area (6 claims) would be conducted to determine valid existing property rights. Non-valid claims would be declared null and void. The BLM would discourage further exploration or mine development on any remaining valid claims. The BLM would pursue relinquishment of valid claims through purchase, exchange, condemnation, or conservation easements from private sources. The purchase or condemnation of valid claims would require Congressional approval.

Part of a Bureau of Reclamation withdrawal (532 acres) was been recommended for termination in a withdrawal review effort (May 1993) since the withdrawal is no longer serving the purpose for which it was withdrawn. The remaining 40 acres was recommended for a 20 year term modification (May 1993) since it is serving the purpose for which it was withdrawn by providing for a current and future riprap quarry for Tiber Reservoir. However, under this alternative the 40 acres would be recommended for termination since the continued use of the riprap quarry would be incompatible with the resource values being protected by the proposed withdrawal of 19,765 acres.

ALTERNATIVE C - PREFERRED ALTERNATIVE

This alternative focuses on BLM's statutory authority to manage the culturally significant natural landform in the Sweet Grass Hills based on resource values and public input. The preferred alternative would withdraw the Sweet Grass Hills study area from mineral entry, close the Sweet Grass Hills ACEC to off-road vehicles, and apply a no surface occupancy stipulation to new oil and gas leases within the ACEC. This alternative would focus primary BLM management on preserving areas of traditional spiritual importance to Native Americans, aquifers in the area that provide potable water to local residents, high value habitat for reintroduction of endangered peregrine falcons, and seasonally important elk and deer habitat.

Land Tenure Adjustment

The BLM would consolidate public holdings (surface and subsurface) in areas adjacent to or within the vicinity of the Sweet Grass Hills ACEC by emphasizing exchange for BLM lands outside the study area, purchase, or conservation easements. None of the BLM land in the study area would be available for disposal. Some important acquisitions would require that both subsurface and surface be acquired. Areas identified as high priority for acquisition include the mineral estate of patented mining claims adjacent to the ACEC, any valid unpatented mining claims, private minerals in the vicinity of Devils Chimney Cave, and other private surface and minerals adjacent to the ACEC. All acquisitions would depend on a willing seller.

The Sweet Grass Hills ACEC boundary would be adjusted to include adjacent acquired lands. These lands would be managed under the guidance in this amendment and the West HiLine RMP (BLM 1988a, 1988b, and 1992a).

Off-Road Vehicle Use

The Sweet Grass Hills ACEC would be closed to all motorized off-road vehicle (ORV) use (7,580 acres). Off-road travel for administration of a federal lease or permit would be granted, unless specifically prohibited. The BLM land outside of the ACEC but within the study area would be open to ORV use (137 acres).

Oil & Gas Leasing and Development

The BLM would issue future oil and gas leases in the Sweet Grass Hills ACEC (6,328 acres), 262 acres adjacent to the ACEC, and 160 acres in the Sage Creek area with a no surface occupancy (NSO) stipulation (Map 2 located in the back of this document). When existing oil and gas leases expire they would be offered with NSO stipulations. On existing leases, the BLM would work with operators to apply guidelines to any new activity which may threaten areas of traditional spiritual importance to Native Americans or aquifers that provide potable water.

The remainder of the study area, 14,659 acres of Federal fluid mineral estate, would be leased with standard stipulations and special raptor stipulations (Appendix B, Attachments B.1 and B.2). Some of these leases would also be subject to enhanced mitigation measures to protect ground water. This mitigation would require cementing casing strings back to the surface for any wells drilled that could affect municipal water districts. This would be determined during processing of applications for permit to drill and would consider the surface recharge, water table level, ground water movement, and geology in the area.

Locatable Mineral Development

The BLM would file a petition with the Secretary of the Interior requesting that the Federal minerals in the Sweet Grass Hills study area (19,765 acres) be withdrawn from locatable mineral entry for a 20-year term (Map 2 located in the back of this document). The withdrawal would be subject to valid existing rights. Validity exams of existing claims in the East Butte area (14 claims) have been conducted to determine valid existing property rights. The results indicate eight of the claims meet the test of discovery under the mining law and are valid (Figure 2). Non-valid claims would be declared null and void. The BLM would encourage holders of valid claims to relinquish their claims through purchase, exchange, or through conservation easements from private sources. Rights-of-way across BLM land would be issued for the purpose of developing the private mineral estate or to any claims determined to be valid. Any acquired minerals would be withdrawn.

The BLM does not intend to examine the six unpatented claims on Middle Butte for validity at this time. These claims are located outside of the Sweet Grass Hills ACEC on private surface over Federal minerals. No new claims could be located on these lands.

Part of a Bureau of Reclamation withdrawal (532 acres) was recommended for termination in a withdrawal review effort (May 1993) since the withdrawal is no longer serving the purpose for which it was withdrawn. The remaining 40 acres was recommended for a 20 year term modification (May 1993) since it is serving the purpose for which it was withdrawn by providing for a current and future riprap quarry for Tiber Reservoir. However, under this alternative the 40 acres would be recommended for termination since the continued use of the riprap quarry would be incompatible with the resource values being protected by the proposed withdrawal of 19,765 acres.

ALTERNATIVE D

Through Alternative D, the BLM would protect areas of traditional spiritual importance to Native Americans and aquifers in the East Butte area that provide potable water to local residents. This alternative recognizes that BLM can implement the most effective resource protection where Federal surface with Federal minerals ownership occurs. With implementation of this alternative the foreseeable hardrock exploration and development described in Appendix A is assumed not to occur.

Land Tenure Adjustment

The BLM would consolidate public holdings (surface and subsurface) only in areas adjacent to or within the vicinity of the Sweet Grass Hills ACEC by emphasizing exchange for BLM lands outside the study area, purchase, or conservation easements. All acquisitions would depend on a willing seller, unless the public interest determination indicates the use of eminent domain authority is appropriate.

A total of 137 acres of BLM land within the study area, but not adjacent to the ACEC would be available for disposal through exchange.

Some important acquisitions would require that both subsurface and surface be acquired. Areas identified as high priority for acquisition include the mineral estate of patented mining claims adjacent to the ACEC and lands in the vicinity of Devils Chimney Cave.

The Sweet Grass Hills ACEC boundary would be adjusted to include acquired lands. These lands would be managed

under the guidance in this amendment and the West HiLine RMP (BLM, 1988a, 1988b, and 1992a).

Off-Road Vehicle Use

The Sweet Grass Hills ACEC would be closed to all motorized off-road vehicle (ORV) use (7,580 acres). Off-road travel for administration of a federal lease or permit would be granted, unless specifically prohibited. The BLM land outside of the ACEC but within the study area would be open to ORV use (137 acres).

Oil & Gas Leasing and Development

The BLM would only issue future oil and gas leases, in the Sweet Grass Hills ACEC (6,328 acres), 262 acres adjacent to the ACEC, and 160 acres in the Sage Creek area, if oil and gas is being drained from Federal minerals by a State or fee well. These lands would be leased with a no surface occupancy stipulation. When existing oil and gas leases expire they would not be offered for lease again unless drainage occurs. On existing leases, the BLM would work with operators to apply guidelines to any new activity which may threaten areas of traditional spiritual importance to Native Americans or aquifers that provide potable water.

The remainder of the study area, 14,659 acres of Federal fluid mineral estate, would be leased with standard stipulations and special raptor stipulations (Appendix B, Attachments B.1 and B.2). Some of these leases would also be subject to enhanced mitigation measures to protect ground water. This mitigation would require cementing casing strings back to the surface for any wells drilled that could affect municipal water districts. This would be determined during processing of applications for permit to drill and would consider the surface recharge, water table level, ground water movement, and geology in the area.

Locatable Mineral Development

The BLM would file a petition with the Secretary of the Interior that the Federal minerals in the Sweet Grass Hills ACEC (6,328 acres) be withdrawn from locatable mineral entry for a 20-year term along with 262 acres adjacent to the ACEC and 160 acres in the Sage Creek area. The withdrawal would be subject to valid existing rights. Validity exams of existing claims in the East Butte area (14 claims) have been conducted to determine valid existing property rights. The results indicate eight of the claims meet the test of discovery under the mining law and are valid (Figure 2). Non-valid claims would be declared null and void. The BLM would discourage further exploration or mine development on any remaining valid claims. The BLM would pursue relinquishment of valid claims through purchase,

exchange, condemnation, or conservation easements from private sources. The purchase or condemnation of valid claims would require Congressional approval.

Part of a Bureau of Reclamation withdrawal (532 acres) was been recommended for termination in a withdrawal review effort (May 1993) since the withdrawal is no longer serving the purpose for which it was withdrawn. The remaining 40 acres was recommended for a 20 year term modification (May 1993) since it is serving the purpose for which it was withdrawn by providing for a current and future riprap quarry for Tiber Reservoir. However, under this alternative the 40 acres would be recommended for termination since the continued use of the riprap quarry would be incompatible with the resource values being protected by the proposed withdrawal of 6,750 acres.

The remainder of the study area would remain open to locatable mineral entry.

SELECTION OF THE PREFERRED ALTERNATIVE

The alternatives were reviewed for effectiveness in resolving the planning issues, conformance with the guidance established by the planning criteria, avoidance of unnecessary impacts to the human environment, responsiveness to public concern, and BLM's statutory authority. Alternative C in the draft amendment/EIS was modified in response to public comments and resource considerations. The modifications include withdrawing all Federal minerals in the study area from locatable mineral entry for a 20-year term, retaining all BLM land in public ownership, adding any acquired lands to the ACEC, and withdrawing any acquired minerals from mining claim location. The modified Alternative C is the preferred alternative. This alternative would form the management guidance for the Sweet Grass Hills and the BLM would proceed with the withdrawal application. The rationale for selecting Alternative C is presented below by issue.

Land Tenure Adjustment

The preferred alternative establishes management direction to accomplish public land adjustment and clearly identifies the area where the BLM would like to acquire lands from willing sellers, that being the mineral estate of patented mining claims adjacent to the Sweet Grass Hills ACEC, private minerals in the vicinity of Devils Chimney Cave, and other private surface and minerals adjacent to the ACEC. This is the area where foreseeable hardrock exploration could occur.

Off-Road Vehicle Use

The preferred alternative would make permanent the management direction that has been in place under a year-round emergency road closure (ERC) implemented in 1989. The ERC was at the request of a local landowner and sportsmen organization because of the high use of all-terrain vehicles during the hunting season and the landowners threatened to close the area to public entry. Development of park and walk areas resolved the problem and the BLM participated with the ERC. Keeping the Sweet Grass Hills ACEC closed to this type of activity would enhance the values for which the area was designated.

Oil & Gas Leasing and Development

The preferred alternative protects the Sweet Grass Hills ACEC and lands in the area that are important as potable water sources (6,750 acres). The remaining Federal oil and gas minerals in the study area (14,659 acres) would remain open to leasing with standard stipulations, a special raptor stipulation, and enhanced mitigation measures to protect ground water. Thus, ACEC values would be protected, loss of revenues due to drainage would be prevented, and the lands with the highest oil and gas potential would still be available for development.

Locatable Mineral Development

The preferred alternative would withdraw the Federal minerals within the Sweet Grass Hills study area (19,765 acres) including the Bureau of Reclamation withdrawn land, along with acquiring through willing sellers the mineral estate of patented mining claims adjacent to the ACEC and any valid unpatented mining claims. Any acquired minerals would be withdrawn. This would provide protection, within BLM's statutory authority, for the Sweet Grass Hills. However, without the acquisition of patented or valid unpatented mining claims, the BLM cannot ensure protection of traditional spiritual values or aquifers that provide potable water to local residents.

COMPARISON OF ALTERNATIVES

Table S.1 presents a summary of the alternatives to resolve the issues and Table S.2 summarizes the environmental consequences for each alternative. Tables S.1 and S.2 are located in the Summary at the beginning of this document. These tables are summaries of the alternative descriptions contained in this chapter and the environmental consequences described in Chapter 4. The reader is referred to the text in these chapters for specifics and more detail about the information in the summary tables.

CHAPTER 3 - AFFECTED ENVIRONMENT

INTRODUCTION

This chapter describes pertinent natural resources and economic and social conditions found in the study area. The following critical elements of the human environment are not affected and will not be addressed further in this document; farm lands, floodplains, wastes (hazardous or solid), wild and scenic rivers, and wilderness. No hazardous wastes are associated with the proposed withdrawal for the Sweet Grass Hills.

LOCATABLE MINERALS

The study area is classified as having high occurrence potential and moderate development potential for precious metal deposits. These deposits are associated with igneous intrusions that originated at depth and moved up through the earth's crust before cooling near the surface. Precious metal deposits are considered locatable under the provisions of the 1872 mining law on Federal land. Appendix A covers the procedure for locatable mineral activity under the section on the Mining Law. The following discussion applies to these deposits in the Sweet Grass Hills.

General Geology

The Sweet Grass Hills consist of three separate butte complexes, East, Middle and West Buttes, and two smaller features, Grassy and Haystack Buttes. The Sweet Grass Hills consist of igneous intrusive rocks that are considered Eocene in age (Ross, 1950). These igneous rocks range in composition from shonkinite to syenite to intrusive trachyte with a minor amount of lamprophyre. The surrounding sedimentary rocks domed up by the intrusives range in age from Mississippian to Cretaceous. These are primarily limestones and shales with minor amounts of sandstone. The older Mississippian Madison Formation occurs near the central portions of East and West Buttes, and the younger Jurassic-Cretaceous formations are found adjacent to Middle Butte, which is of smaller size. The sedimentary rocks, particularly limestone, have been chemically and physically altered due to contact metamorphism and hydrothermal fluids associated with the igneous activity.

The Sweet Grass Hills are prominent land marks, rising nearly 3,000 feet above the surrounding plains and are visible for more than 50 miles. West Butte lies 13 miles

west-northwest of Whitlash, the nearest town. The central core is an exposure of diorite porphyry and monzonite, a rock similar to common variety granite, but with less quartz. Middle Butte lies 3 miles west-southwest of Whitlash and covers a hilly area about 5 miles wide and 5 miles long. The ghost town of Gold Butte, formerly a gold mining camp, rests on the northwest flank of the tallest hill in the Middle Butte complex, which bears the same name as the former town. Gold Butte is an exposed laccolith consisting of diorite porphyry. It is separated from two other buttes, of similar composition, by carbonaceous shale which is cut by numerous dikes and sills. The sedimentary rocks are less resistant and form swales between the higher ridges composed of igneous rock. East Butte consists of alkalic igneous rocks intruding Paleozoic and Mesozoic sedimentary rocks as plugs, laccoliths, stocks, dikes, and sills. The igneous rocks consist of monzonitic and syenitic trachytes and latite porphyries. The domed sedimentary rocks are silicified, altered and highly fractured. Limestone alteration includes recrystallization as marble and some skarn mineralization. Quartz with pyrite, magnetite, and fluorite mineralization also occur primarily as fracture filling in places (Gavin, 1991). The Jurassic and Cretaceous rocks composed primarily of shales and fine siltstones show signs of contact metamorphism ranging from recrystallization to silicification and intense fracturing. East Butte is the largest of the 3 Buttes with a 9 square mile area of uplifted terrain. The combination of igneous intrusive rock and altered sedimentary strata has not been mapped in enough detail to differentiate between the separate sedimentary units. Much of the valley bottoms and the lower slopes of ridges are covered with Quaternary alluvium and colluvium. This makes interpretation through surface mapping more difficult.

Devil's Chimney Cave, in East Butte, is a roughly circular solution cavity, or room, within the limestone formation. The room is about 50-feet across with a 10-foot diameter opening to the surface 40 feet above the cave floor. No speleothems were observed inside the cave (Campbell, 1978). There is a large amount of break-down material on the cave floor. Montana State University (MSU) conducted preliminary investigations of less than one-half of one percent of the cave break-down deposits in the early 1970s. Numerous faunal remains, some of which exhibited modification, were recovered during the excavations. The exploratory testing conducted by MSU established the fact that Devil's Chimney cave does contain Holocene faunal remains. The cave has the potential to contribute important information to the paleo-environmental record on the northern plains.

Economic Geology

Historical Activity: A small amount of gold was recovered from placer operations in Two Bit Gulch on the north slope of Gold Butte within the Middle Butte complex. The total yield of placers near Gold Butte is probably less than 2,000 ounces of gold (Ross, 1947). Lode deposits at the head of Ribbon Gulch, in the East Butte complex, were reported at about 8,700 pounds of copper, 8,400 pounds of lead, 1,100 pounds of zinc, and 651 fine ounces of silver. This activity was reported from underground exploration at the Sweetgrass Mine in 1963 (Hubbard, 1966). The area was explored for copper, lead, zinc and silver by the Anaconda Copper Company during the late 50s and early 60s. This included drilling on lode claims on all three buttes. The East Butte vein deposits were the only claims that justified underground excavation and sampling of ore in addition to the drilling. The mine portal location is shown on the south side of Mount Royal (Map 3 located in the back of this document).

Recent gold exploration in the East Butte area (1986-Santa Fe Pacific Mining, Inc. and 1989-Cominco American Resources) after 20 years of relative inactivity is the result of two main factors. First, the technology of heap leach mining methods which allowed economic recovery of fine gold from low grade deposits using cyanide solution percolated through high volumes of ore was successfully used at other mines in central Montana. Second, the deregulation of gold prices in 1974 placed new emphasis on exploration in areas with known reserves. The price of gold went from \$35 an ounce to \$800 an ounce by 1980, and has remained fairly constant in the \$300 to \$400 an ounce range over the last decade. The higher prices have resulted in a rejuvenation of gold mining activity throughout the western states. Many areas passed over during the late 1880s and early 1900 mining era are being evaluated for development at the current higher prices.

There are many factors that figure into the equation before a decision to invest in the development of a mine. These include; the size of the deposit, metallurgy of the gold mineralization, mining, crushing and hauling of the ore and waste, permitting costs, and proximity to sources of equipment and supplies. The Sweet Grass Hills, unlike other areas of recent mining activity, have no history of productive gold mines. This may be an indication that the more conventional lode deposits do not exist or are not as readily apparent and that the recent exploration is the first venture into defining disseminated gold deposits in the Gold Butte mining district. Appendix A contains more information on the potential for development of a mine in the Sweet Grass Hills.

Recent Activity: To date, mining activity on Federal lands within the Sweet Grass Hills resulted in the construction of 20,000 feet of access roads and drilling nine exploration holes in the Tootsie Creek area of East Butte. All of the holes were plugged and the roads back-sloped and reseeded. This activity was approved by the BLM and DSL under two separate Plans of Operation. The exploration was conducted by two companies in a joint venture with the claimant. In addition to the drilling data the companies sampled and mapped the bedrock exposed in the road cut. The metals sampled for include; molybdenum, copper, lead, zinc, silver, nickel, arsenic, cadmium, antimony and gold. Soil and stream geochemical sample analysis was also conducted.

Extensive mapping and rock sampling has been conducted in the Breed Creek and Tootsie Creek area of East Butte. Data sources show widespread mineralization and positive precious and base metal anomalies exist in these areas. The Tootsie Creek area is the most well defined area in East Butte. Ten years of exploration at Tootsie Creek has produced 4,200 feet of subsurface information from 14 drill holes which includes over 800 assays, and over 11,000 feet of surface-trench samples with over 1,250 assays. Scores of outcrop data and hundreds of geochemical soil assays are also on file. Reports summarizing the results of the sample analysis at Breed Creek and Tootsie Creek have been submitted to the BLM for use in resource assessment.

The most current proposed exploration activity is an exploration plan submitted by Manhattan Minerals (US) Ltd. to the BLM and DSL in February 1992. A draft Royal East Joint Venture Exploration Project Environmental Impact Statement (EIS) was issued on this proposal in January of 1993 which describes this proposed activity. The reader is referred to that EIS for more information on the proposal.

The BLM has completed the validity examination of E.K. Lehmann's 14 unpatented mining claims on the East Butte. The results indicate eight of the claims meet the test of discovery under the mining law and are valid (Figure 2). The validity examination process determines if there is sufficient showing of a mineral to constitute a discovery, which in turn justifies a prudent person spending money with a reasonable prospect of success.

In addition to the exploration on East Butte, Montana Gold Butte Mining is currently conducting underground mining/sampling in the Middle Butte area on private land (personal communication with Pete Strasdas, DSL). No data is available on the results of this activity. It is a small operation permitted for removal of less than 36,500 tons per year. A placer mining operation is located on the northwest side of Middle Butte in the headwaters of Eclipse creek. Surface flow in the area is intermittent and availability of water

restricts the operation to springtime seasonal use. There is no data available on production from this operation. West Butte has been the site of recent exploration in the form of surface mapping and soil geochemical sampling on unpatented claims. Currently no application for drilling or trenching has been received by the BLM and DEQ in this area.

OIL AND GAS

East, Middle, and West Buttes of the Sweet Grass Hills are the exposed portions of igneous intrusions and the associated uplifted sedimentary rocks that extend over an area of approximately 68,605 acres. Of that acreage, 21,409 acres are Federal minerals that are currently leased for oil and gas, or are available for oil and gas leasing.

The sedimentary rocks found in the hills are generally faulted, slightly to highly metamorphosed sandstones, shales, and limestones. Composition of the intrusives varies from one butte to the next, but is generally classified as ranging from syenite to diorite porphyry. Monzonite, lamprophyres, and more mafic sills and dikes are known to occur throughout the buttes and in the surrounding sediments. The intrusives are believed to be laccoliths with their bases located in the Colorado group sediments or possibly the Mississippian age rocks. Laccoliths are relatively flat bottomed igneous intrusives that form as a result of magma piercing the overlying sediments and then spreading out from the original conduit into the surrounding sediments. Often times the conduit is much smaller than the surface expression. In vertical cross section these structures have a mushroom or umbrella like shape.

The laccolith's shape is important in the occurrence of oil and gas traps. Like salt domes, these intrusives cause deformation of the overlying and surrounding sediments. This deformation can result in the formation of structural traps in which hydrocarbons can accumulate. Unlike salt domes, these intrusives also provide a heat source for thermal maturation of organic carbon contained within the surrounding and overlying rocks. In addition, the molten rock intrudes into fissures, faults, and weakened areas created by the warping and uplifting of the overlying sedimentary rocks thus, filling potential leak points and potentially forming trapping seals. Local metamorphism of sand to quartzite, shale to argillite and slate, and limestone to marble, can form permeability barriers that could trap hydrocarbons.

Sediments overlying and adjacent to the buttes are deformed as a result of the emplacement of the Sweet Grass Hills laccoliths. This deformation has created numerous

smaller oil and gas fields in the surrounding sediments. However, because the extent of the known igneous intrusives at any particular depth is uncertain, and that the potential exists for unexposed laccoliths which may have caused similar structural traps, additional undiscovered oil and gas fields may underlie the sediments below and on the flanks of the buttes and in the surrounding sedimentary rocks. Accordingly, all of the Sweet Grass Hills study area and surrounding acreage is classified as high potential for oil and gas occurrence. A generic description of drilling activities and a projection of future oil and gas exploratory and development drilling for the Sweet Grass Hills and surrounding area is detailed in Appendix B. A description of the oil and gas leasing and development program for the West HiLine planning area can be found in Appendix 1.3 of the final West HiLine Resource Management Plan (BLM, 1988a).

Existing production from the Sweet Grass Hills is primarily from Cretaceous and Mississippian age rocks. Virtually no deeper exploration of the Devonian age rocks has been conducted. Although the existing fields are not large by comparison, they are relatively shallow and easy to produce. These characteristics make such fields good exploration/development opportunities for small, independent operators.

The 13 townships adjacent to the three buttes contain numerous oil and gas fields. Production from these fields is quite significant and has played an important role in the local economy.

SOILS

The Sweet Grass Hills provide for unique and limited soils developed on igneous bedrock in mountainous and forested areas.

East Butte

The East Butte area is steep and dissected by deep drainages. Most of the Butte (about 80%) is on slopes greater than 25 percent, with most slopes between 40 and 60 percent. Elevations range from 5,100 to about 6,400 feet.

The area is dominated by steep and very steep barren areas with more than 90 percent of the surface occupied by stones and boulders of igneous (syenite) origin. These igneous scree or talus areas are virtually free of vegetation except for lichens. *Elve*, very cobbly loam soils on North slopes produce forest vegetation with a limited grassed understory and are adjacent to and within the talus slopes. These deep, excessively well-drained, cobbly soils have 35 to 60 per-

cent rock fragments by volume. The water erosion hazard, when bare, is high due to steep slopes, and excessive cobbles and stones.

Adjacent to the igneous laccolith material are the shallow *Winspect* cobbly loam and moderately deep, *Winspect, cool phase* cobbly loam soils over limestone on ridges and convex slopes associated with the limestone bedrock outcrops. This soil produces sparse grass and forest vegetation of lesser quality.

The surrounding footslopes below East Butte are dominated by *Roy and Barkof* clay soils formed on sedimentary clay shales. These deep, well-drained soils have a high risk to water erosion, due to slopes and clay texture. The surrounding glacial till plain is represented by *Vida-Williams-Bearpaw* soils formed in glacial till. These deep, well-drained clayey soils have erosion hazard to both water and wind, when bare. These soils are easily compacted when moist.

Middle Butte

The Middle Butte area is steep and dissected by deep drainages. Most of the land is on slopes greater than 25 percent, with most slopes between 40 and 70 percent. Elevations range from 5,100 to about 6,400 feet.

The area is dominated by steep and very steep barren areas with more than 90 percent of the surface occupied by igneous (syenite) stones and boulders. These igneous scree or talus areas are virtually free of vegetation except for lichens. Most of the Middle Butte area is occupied by *Perma and Whitlash* cobbly loam soils on the 25 to 70 percent slopes which produce limited grass and shrub vegetation and are adjacent to and within the talus slopes. *Perma* cobbly loam soils are deep, somewhat excessively well-drained, and have 35 to 60 percent cobbles and stones by volume. The water erosion hazard, when bare, is high due to steep slopes, and excessive cobbles and stones. *Whitlash* cobbly loam soils are shallow, well-drained soils over shattered igneous bedrock, have 35 to 60 percent cobbles and stones by volume. The water erosion hazard, when bare, is high due to steep slopes, and excessive cobbles and stones.

The large adjacent areas on the 8 to 25 percent slopes are dominated by the *Perma* gravelly loam soils.

The surrounding footslopes below Middle Butte are dominated by *Roy and Barkof* clay soils formed on sedimentary clay shales. These deep, well-drained soils have a high risk to water erosion, due to slopes and clay texture. The surrounding glacial till plain is represented by *Zahil-Zahl* soils formed in glacial till. These deep, well-drained clayey

soils have erosion hazard to both water and wind, when bare. These soils are easily compacted when moist.

West Butte

The West Butte area is steep and dissected by deep drainages. Most of the land is on slopes greater than 25 percent, with most slopes between 40 and 70 percent. Elevations range from 5,100 to about 6,400 feet.

The area is dominated by steep and very steep barren areas with a large percentage of the surface occupied by igneous (syenite) stones and boulders. These igneous scree or talus areas are virtually free of vegetation except for lichens. Areas of *Stemple* soils on north facing slopes produce forest vegetation with a limited grass understory. *Stemple* soils are very deep, well-drained, have 35 to 60 percent cobbles and stones by volume. The erosion hazard, when bare, is high due to steep slopes and excessive cobbles and stones. Most of the West Butte area is occupied by *Perma and Whitlash* cobbly loam soils on the 25 to 70 percent slopes which produce limited grass and shrub vegetation, are adjacent to and within the talus slopes. *Perma* soils are deep, somewhat excessively well-drained, and have 35 to 60 percent cobbles and stones by volume. The water erosion hazard, when bare, is high due to steep slopes, and excessive cobbles and stones. *Whitlash* soils are shallow, well-drained soils over shattered igneous bedrock, have 35 to 60 percent cobbles and stones by volume. The water erosion hazard, when bare, is high due to steep slopes, and excessive cobbles and stones. Adjacent areas on the 8 to 25 percent slopes are dominated by the *Perma* soils.

The surrounding glacial till plain below West Butte are dominated by *Vida-Williams-Bearpaw-zahl* soils formed in glacial till. These deep, well-drained clayey soils have a high risk to water erosion, due to slopes and clay texture. These soils also have a soil blowing hazard from wind, when bare. These soils are easily compacted when moist.

VEGETATION

The major plant community types in the Sweet Grass Hills have been adequately described in previous publications.

Below is a summary of the habitat/community types identified in or peripheral to the Sweet Grass Hills prepared by Western Technology and Engineering, Inc. (1989). Most of the area designated as an ACEC consists of coniferous forest and scree vegetation/community types.

Grassland Types

Prairie Grassland: Several types potentially occur in the prairie surrounding the Sweet Grass Hills. However, most of the flat, arid prairie surrounding the Sweet Grass Hills has been altered by agriculture. Little native prairie, probably formerly dominated by western wheatgrass, needleandthread and blue gramma, now remains.

Absence of fescue species differentiates the prairie grassland from foothills, montane, and subalpine grasslands. Dominant species include wheatgrasses (primarily western in association with thickspike and bluebunch), needlegrass (primarily needleandthread with some green needlegrass), blue gramma and dryland sedges (threadleaf and needleleaf).

Foothills Grassland: This type is dominant in the Buttes immediately above prairie grassland. Fescues dominate most stands. Pristine sites are dominated by rough fescue. Idaho fescue is present in each stand, but composition is low. Perennial forbs contribute 4 to 10 percent composition by weight. Needleandthread increases with grazing and rough fescue decreases dramatically.

Montane Grassland: As in the foothills grassland zone, rough fescue is the dominant species over most of the montane grassland. Potential habitat types within this zone include rough fescue/Idaho fescue, rough fescue/bluebunch wheatgrass, and Idaho fescue/bluebunch wheatgrass.

The rough fescue/bluebunch wheatgrass and Idaho fescue/bluebunch wheatgrass types are more limited than the rough fescue/Idaho fescue type in the Sweet Grass Hills.

Subalpine Grassland: The subalpine grassland is limited to relatively small areas above timberline on the summits of Mount Royal and West Butte. Rough fescue is dominant in some stands, but community stature and associated species composition indicate dissimilarities with montane grassland. Two types are rough fescue/shrubby cinquefoil and sedge meadow. Idaho fescue and shrubby cinquefoil are dominant on the top of Mount Royal.

Upland Shrub

Shrubby Cinquefoil Grassland: Relative cover of shrubby cinquefoil in some areas warrants separation from grassland types. Rough fescue, usually the dominant grass, identifies the shrubby cinquefoil/rough fescue habitat type. Idaho fescue is dominant in other stands, implying a shrubby cinquefoil/Idaho fescue type. Since shrubby cinquefoil generally increases with grazing, this type may be a grazing induced seral community in the Sweet Grass Hills.

Western Snowberry/Rose: Swales, upland drainages and other snow accumulation areas support a low shrub type dominated by western snowberry and rose. Understory species are similar to the adjacent grasslands with higher abundance of mesic-site species. Kentucky bluegrass has generally invaded these stands.

Coniferous Forest and Savannah Types

Limber Pine Series: Limber pine is present as a codominant or subdominant in the Douglas-fir series, and forms pure stands on dry ridges east of Mt. Brown. Limber pine stands are frequently open, appearing as a woodland or savannah. Idaho fescue is the dominant understory species.

Douglas-fir Series: Douglas-fir occurs as dense forests on north facing aspects at lower elevations and as a savannah on drier south-facing slopes. It is a seral component of higher elevation forest in the spruce or subalpine fir series. Douglas-fir types described for the Bear's Paw Mountains and the Little Rocky Mountains that may be present in the Sweet Grass Hills include Douglas-fir/western snowberry, Douglas-fir/serviceberry, Douglas-fir/kinnininnick, Douglas-fir/Oregon grape, Douglas-fir/Canada violet, Douglas-fir/twinflower and Douglas-fir/bunchberry dogwood.

Lodgepole Pine Series: Lodgepole is extensive at mid to upper elevations on cool, mesic slopes. It is likely seral, related to fire history. Types that may be present include lodgepole pine/twinflower, lodgepole pine/mixed shrub, lodgepole pine/huckleberry species, and lodgepole pine/common juniper.

Spruce Series: Spruce is found on East Butte at mid to upper elevations. Potential types include spruce/twinflower, spruce/common juniper and spruce/matted clematis on limestone substrates.

Subalpine Fir Series: Subalpine fir/common juniper and subalpine/twinflower may be found in the Sweet Grass Hills. Other possible subalpine fir types include subalpine fir/grouse whortleberry, and subalpine fir-whitebark pine at the highest elevations.

Riparian and Wetlands

The BLM contracted the Montana Riparian/Wetland Association to conduct a wetland inventory of public lands in the Sweet Grass Hills in 1989 and 1990. The following creeks were inventoried; Pratt, Iron, Breed, Little Joe, Corral, Deer, Dohrs, Sage, Tootsie, and Government. Status of the health and function condition of these areas is shown in Table 3.1.

TABLE 3.1

STATUS OF RIPARIAN-WETLAND AREAS
IN THE
SWEET GRASS HILLS STUDY AREA

Stream Name	Length (miles)	Status*
Pratt Creek	0.2	Proper Functioning Condition
Iron Creek	0.5	Functioning At Risk
Little Joe Creek	0.5	Proper Functioning Condition
	0.5	Functioning At Risk
Corral Creek	0.5	Proper Functioning Condition
	0.5	Functioning At Risk
Deer Creek	0.5	Nonfunctional
	1.0	Functioning At Risk
Dohr's Creek	1.0	Nonfunctional
Sage Creek	0.6	Nonfunctional
	0.9	Functioning At Risk
Tootsie Creek	0.2	Proper Functioning Condition
	0.6	Nonfunctional
	2.2	Functioning At Risk
Government Creek	0.1	Functioning At Risk
Breed Creek	0.4	Proper Functioning Condition

*Status definitions are in the Glossary.

Deciduous Forests

Aspen occurs as groves surrounded by grassland and as woodland in coniferous forest. Understory is dense and diverse. Possible types include aspen/sweetroot in the groves and aspen/twinflower or aspen/western snowberry in the coniferous forests.

Scree/Talus/Rock Outcrop

Most rocky slopes are poorly vegetated and can be designated technically as scree, talus or rock outcrop. Scattered trees occur on some rocky slopes and may be designated as limber pine/scree, spruce/scree or lodgepole pine/scree depending on tree species dominance.

Noxious Weeds

At least three state-listed noxious weeds are present in the Sweet Grass Hills. These include leafy spurge, spotted knapweed, and Canada thistle.

Threatened and Endangered Plant Species

There are currently no plant taxa in the Sweet Grass Hills that are listed as threatened or endangered under the Endangered Species Act of 1973.

The Montana Natural Heritage Program has been involved with several sensitive species studies in the Sweet Grass Hills. There are a number of plant communities in excellent condition which are rare or at the extremes of their ranges in the state and in need of further study. On-site surveys for sensitive plants would be needed for environmental assessments on specific actions.

The Montana Natural Heritage Program has an element occurrence record for the following sensitive plant species in the Sweet Grass Hills:

Twiggy Halimolobos (*Halimolobos virgata*) - A sparse population was found in the East Butte area about two miles NE of Mount Brown.

Long Sheath Waterweed (*Elodea longivaginata*) - This is an aquatic species in an oil and gas field 4.5 miles north of Whitlash.

Heart-Leaved Buttercup (*Ranunculus cardiophyllus*) - This was originally found on private land near West Butte but was not relocated in subsequent field surveys on public land.

AIR QUALITY

The Sweet Grass Hills are in a class II airshed, as set by the State of Montana. Air quality is good to excellent in the higher elevations. Dust clouds can periodically be observed on the surrounding plains during dry periods due to agriculture practices and from vehicle traffic on unpaved roads. Particulate concentrations are highest during spring and summer due to farm operations, construction activities associated with the oil and gas industry, exhaust emissions from heavy equipment, spraying of noxious weeds and venting of casinghead gas associated with oil production.

WATERSHED

Topography

The land surface (topography) of the Sweet Grass Hills and the surrounding area is largely a product of geologic forces.

Igneous intrusive rocks caused the uplift of the hills followed by erosion of these uplifted units. The more resistant limestone and igneous rocks form steep-sided buttes. Less resistant sandstones and shales form subdued foothills encircling the buttes. Igneous dikes and sills form irregular ridges and knobs. Below about 5,000 feet in elevation, glacial deposits form an undulating surface which becomes less evident as the foothills melt into the surrounding prairies.

Climate

The climate of the Sweet Grass Hills is semiarid. The orographic effect of the Sweet Grass Hills results in average annual precipitation reaching 20 inches on the highest buttes and dropping to 10 to 12 inches at Chester, 20 miles south of the Sweet Grass Hills. May through August is generally the wettest period of the year with approximately 65 percent of the annual precipitation occurring in this period. The mean annual temperature is approximately 42 degrees Fahrenheit (F) with extremes ranging from 100 degrees F for short periods during the summer to -50 degrees F during severe winters. The average growing season is about 90 days.

Surface Water

The streams in the Sweet Grass Hills are ephemeral or intermittent, although short segments of some of the larger streams tend to be perennial. Flow results from snowmelt or intense summer storms. Snow accumulated throughout the winter in dense drifts allows some streams to flow into mid summer. Streams on the north side of the Sweet Grass Hills flow into the Milk River while streams flowing from the south side flow into the Marias River. Streams tributary to the Milk River are classified B-1 by the Montana Water Quality Act (MDHES, 1982) while streams tributary to the Marias River are classified B-2. Water quality is excellent in the upper portions of the streams, but decreases in the downstream direction as it picks up sediment on the plains and ground water contributions from underlying formations. The water is a sodium to calcium bicarbonate type and slightly alkaline. Specific conductance (SC) ranges from 340 to 1,170 microsiemens per centimeter (uS/cm), pH values range from 7.7 to 8.5, and total dissolved solids (TDS) concentration ranges from 240 to 780 milligrams per liter (mg/l) (USGS, 1993).

Ground Water

Little data is available to describe the ground water hydrology in the higher elevations in the Sweet Grass Hills. More data is available for the foot hills and plains within the study area. Doming, fracturing, faulting, and folding greatly

influence the occurrence and movement of ground water in the study area. Surface geologic data suggests shallow ground water (within 500' of the surface) movement within the Sweet Grass Hills generally follows the surface topography. The ground water is recharged locally by surface flows over exposed limestones, sandstones, and glacial deposits of sand and gravels on the flanks of the Sweet Grass Hills. In the foothills and plains the aquifer systems become more continuous. Two principal unconsolidated aquifer systems are the shallow alluvium of the principal streams, and the interstratified sand gravel in glacial deposits. Two consolidated aquifer systems also exist in the study area, the Judith River Formation and the Virgelle Sandstone Member of the Eagle Sandstone.

These four aquifer systems are sources for the 90 springs and 40 wells in the study area (Map 3 located in the back of this document). Approximately one-half of these springs and wells are used for domestic purposes, while the remainder are used for stock water. One well, the Sage Creek Water Users well, serves over 60 users with an extensive pipeline system. Waters within these four aquifer systems flow into the regional ground water system and flow is generally to the north, northeast and east.

The United States Geological Survey (USGS) recently published a study of these four aquifer systems on the north flank of the Sweet Grass Hills describing water quality, quantity, and flow characteristics (USGS, 1993).

Water quality sampling from the alluvial aquifer at the Sage Creek and Bear Gulch sites, indicate generally good water quality. The water is a calcium bicarbonate type, with a pH of 7.1, SC of 670 uS/cm, and TDS of 439 mg/l (USGS, 1993). Water quality from the interstratified sand and gravel glacial deposits exhibited more variation in water quality. The water was generally suitable for stock watering, but varied from suitable to marginal to unsuitable for domestic use (USGS, 1993). One sample collected from the Judith River aquifer indicates water quality is marginal for domestic use, but suitable for stock water (USGS, 1993). Water quality from the Virgelle Sandstone is variable ranging from suitable to unsuitable for domestic purposes but generally suitable for stock use. This water is a calcium to sodium bicarbonate type with pH ranging from 7.2 to 8.6, SC from 392 to 2,070 uS/cm, and TDS from 213 to 1,360 mg/l (USGS, 1993).

Residents in or near the study area are highly dependant upon domestic water either wholly or partially derived from the Sweet Grass Hills. Water of suitable domestic quality either becomes deficient in quality, quantity, or too deep for economical recovery in directions away from the Sweet Grass Hills.

A current hydrologic study is concentrating on water resources of the East Butte portion of the Sweet Grass Hills. The Montana Bureau of Mines and Geology (MBMG) is conducting this study with a scheduled completion date of April, 1996. Conversations with the MBMG, based on preliminary information, indicate that the area is sensitive to surface disturbing activities such as mining and oil and gas. Any of these activities has the potential to impact the shallow aquifer system surrounding East Butte. This is consistent with the analysis in the amendment/EIS which is based on information from the United States Geological Survey (USGS, 1993) on the four aquifer systems in the Sweet Grass Hills. The additional information specific to East Butte is not essential for a reasoned choice among the alternatives. This additional information may be useful for evaluating Manhattan Minerals (US) Ltd. pending exploration proposal in the East Butte area once the BLM continues processing of the proposal.

Water Rights

Presently no water rights claims are filed on public lands within the study area except the implied instream stock use. The Montana Department of Natural Resources and Conservation has imposed a basin closure to Breed, Miner's, and Bear Gulch Creeks and their tributaries for future consumptive development of surface water. An exception was granted for livestock and domestic developments which use less than three acre feet per year. Applications for consumptive use of surface waters in these drainages for irrigation, mining, or other uses are not currently being accepted. Other drainages in the study area remain open for applications for both surface and ground water uses.

WILDLIFE

The Sweet Grass Hills provide important mountainous and forested habitats for elk, mule deer, and white-tailed deer. The dense forests, extreme topographic relief and lush deciduous drainages are unique and generate considerable interest to the local residents because of their wildlife values.

Approximately 300 elk inhabit the Sweet Grass Hills, with about half using East Butte. Radio relocation data indicate that interchange between buttes, especially by females, is probably uncommon (Olson, 1991). These data also indicate that both cows and bulls use predominantly north to east-facing slopes. Relocations of elk on south slopes were very rare, with west and southwest slopes receiving only limited use during the fall. Most winter use by elk on East Butte has been recorded east of Mount Royal, in the general locale of the recent mine explorations, and northward

toward an area between Mount Brown and Mount Lebanon. During winter, elk would most commonly feed on wind swept, warm exposures, where grasses are available; and bed in the nearest timber which provides adequate thermal cover. Elk calving often occurs on the edges of the winter range, at the lowest timber extremities, and peaks about June 1st.

During the summer, elk use higher elevations, where forbs stay succulent. They may proceed to drainage bottoms and alfalfa fields when desiccation (drying) of forbs occurs. Summer and fall elk distribution appears more scattered. Fall distribution is likely a result of hunting pressure, with elk concentrations probably due to hunting closures on private lands, or other inaccessible situations. The Sweet Grass Hills ACEC is relatively inaccessible on both East and West Buttes and probably serves as a security area during much of the hunting season. Other security is provided on private lands where hunting is limited or not allowed.

The most common big game animal in the Sweet Grass Hills is the mule deer. Densities as high as 22 deer per square mile have been recorded. Mule deer can probably be found in most areas throughout the year, but tend to prefer similar wind swept exposures as elk during the winter with heaviest concentrations at the prairie/timber edges. The area south of Iron Creek, used by elk in the winter, also carries high numbers of mule deer (personal communication with Gary Olson, MDFWP). They use drainage bottoms and hay and alfalfa crop lands during all the seasons. The higher, timbered areas are used mostly during the summer. The areas influenced by previous exploration activity are classified as year-round habitat, but would probably be most important to mule deer during the winter.

White-tailed deer are common to all drainages extending from the hills. The rank deciduous-shrub vegetation lining these drainages creates excellent cover as well as forage for whitetails. The heads of some of these drainages lie mid-slope in the hills and the deer habitat can extend for over 5-miles down their length. Hay cropland can be important as feeding sites for the whitetails. Whitetail habitat is not prevalent in the vicinity of the Sweet Grass Hills ACEC.

In addition to the above listed big game species, pronghorn antelope and sharp-tailed grouse occupy the foothills and prairies surrounding the Sweet Grass Hills.

No small mammal or bird inventories have been undertaken in the study area by the BLM. It is suspected that the variety and numbers of these classes of animals may be relatively small in the Sweet Grass Hills ACEC due to the harshness of the environment. Lower elevations in the study area would likely have higher densities.

Larry S. Thompson (1978) studied abundance, habitat use, and altitudinal range of summer birds of the Sweet Grass Hills. He encountered 100 species of breeding birds, of which he considered 18 to be montane. Despite the apparently high densities of five of these species, his overall impression of the montane avifauna was of low individual densities of birds as well as low numbers of species.

The U.S. Fish and Wildlife Service (USFWS) has indicated that federally-listed endangered and threatened species which may occur in the general locale are the bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus*), and black-footed ferret (*Mustela nigripes*).

No historic breeding territories are on record for bald eagles or peregrines in the Sweet Grass Hills. The area probably lacks fisheries suitable as a food source for breeding pairs of bald eagles. However, both peregrine falcons and bald eagles may occur in the area as spring and/or fall migrants. The Sweet Grass Hills appear to be suitable breeding habitat for peregrines and will likely serve as a hack site for reintroduction. No prairie dog towns, considered necessary habitat for black-footed ferret, are in the study area.

RECREATION

A wide range of recreational activities take place on the Sweet Grass Hills Special Recreation Management Area (SRMA-#MT06753). An estimated 1,200 visits were recorded for the public lands in this area for fiscal year (FY) 1993. The most visits were associated with hiking, backpacking, and hunting. Other activities include sightseeing, wildlife viewing, caving, rockhounding, and some winter sports, depending on the amount of snow cover in the area.

The public land in and around the Sweet Grass Hills is rated visual resource management (VRM) class II with a scenic quality of "A" or excellent scenery. The Sweet Grass Hills offer a stark contrast to the surrounding prairie and can be seen from a great distance away. From ridgecrests and peaks, the cultivated plains surrounding the buttes may be seen for up to 100 miles on a clear day.

Access to the public lands for motorized vehicles is minimal. In most cases permission from private landowners must be obtained. Walk-in hunting areas have been established in coordination with adjacent landowners and the implementation of an ORV closure on the BLM land. Some signing has occurred on public land, but on a very limited basis.

The East Butte is the site of recreational activity during the summer months as hikers park in the Iron Creek drainage on

the east side and work their way along an old jeep trail to the Devil's Chimney Cave. A land exchange completed in 1982 provided legal access to public land on the north side of East Butte, but the terrain is very rugged.

No developed recreation sites have been established on BLM land in the study area.

LANDS

The Sweet Grass Hills study area is located in northern Montana adjacent to the Canadian border. West and Middle Buttes of the Sweet Grass Hills are located in northern Toole County and East Butte is in northern Liberty County. The study area contains 68,605 acres; West Butte (16,693 acres), Middle Butte (16,018 acres), and East Butte (35,894 acres).

The Sweet Grass Hills ACEC is within the study area (7,580 acres) and is comprised of West Butte (2,592 acres), Middle Butte (666 acres), and East Butte (4,322 acres). The ACEC affects Federal surface ownership only, see Table 3.2 for the legal description.

There are 19,765 acres of locatable Federal minerals within the study area (Federal surface with Federal minerals and private surface with Federal minerals). Additional private lands with Federal oil and gas subsurface total 1,644 acres, (Table 1.1).

East Butte contains Federal right-of-ways (ROW). These include one linear ROW, ten-feet wide for a power line located on Mount Royal and 25 communication site ROW's located in twelve buildings on Mount Royal. Middle Butte contains one Federal ROW for reservoir and ditch, this land was later patented. Mount Royal provides a major communications link for Federal, State and local government emergency services. Local businesses are dependent on these communication sites to maintain contact with their field personnel. Local reception of TV and radio broadcast would be impossible without the Mount Royal communications site.

The study area does not contain any major roads, highways, power lines, electrical transmission lines, pipelines or a major transportation corridor. All additional ROW's that exist are on private surface and consist of several county roads, utility lines (power, phone, water), and oil and gas gathering systems. Eleven homes are within the study area; West Butte (3), Middle Butte (3), and East Butte (5).

East Butte has a withdrawal to the Bureau of Reclamation (BR), of 572.40 acres for the Marias River/Tiber Dam Irrigation project.

TABLE 3.2
LEGAL DESCRIPTION FOR THE SWEET GRASS HILLS ACEC

West Butte

T. 37 N., R. 1 E.,PMM., Toole County	
sec. 13, lots 4 and 5, SE1/4SW1/4, and SW1/4SE1/4;	151.95
sec. 14, lots 1 to 3, inclusive, W1/2NE1/4, E1/2SW1/4, and SW1/4SW1/4;	249.28
sec. 15, SE1/4SE1/4;	40.00
sec. 24, lots 1 to 4, inclusive, W1/2E1/2, NE1/4NW1/4, E1/2SW1/4, and SW1/4SW1/4	475.36
sec. 25, lots 1, 2, 3, 5, 6, and 8 to 10 inclusive, SW1/4NE1/4, S1/2NW1/4, NE1/4SW1/4, and NW1/4SE1/4;	513.24
sec. 26, SE1/4NE1/4;	40.00
T. 37 N., R. 2 E.,PMM., Toole County	
sec. 19, lot 4;	40.03
sec. 20, NW1/4NE1/4, and NE1/4NW1/4;	80.00
sec. 30, lots 1 to 4, inclusive, S1/2NE1/4, SE1/4NW1/4, E1/2SW1/4, and SE1/4;	520.88
sec. 31, lots 1 to 3, inclusive, NE1/4, E1/2NW1/4, NE1/4SW1/4, and N1/2SE1/4;	480.75
West Butte Total	2,591.49

Middle Butte

T. 36 N., R. 3 E.,PMM., Toole County	
sec. 29, SW1/4NE1/4, S1/2NW1/4, SW1/4, W1/2SE1/4, and NE1/4SE1/4;	400.00
sec. 30, SE1/4SE1/4;	40.00
sec. 31, lots 2 and 3, NE1/4NE1/4;	105.90
sec. 32, NW1/4NE1/4, and N1/2NW1/4;	120.00
Middle Butte Total	665.90

East Butte

T. 36 N., R. 4 E.,PMM., Liberty County	
sec. 13, NW1/4NE1/4, and W1/2;	360.00
sec. 24, lots 1 to 4, inclusive, Part of MS 3381, N1/2NE1/4, SW1/4NE1/4, and N1/2NW1/4;	394.65
sec. 25, lots 1, 2, 4, 5, 6, and E1/2NE1/4;	201.46
sec. 36, lots 1 to 3, inclusive, and 5;	125.55
T. 36 N., R. 5 E.,PMM., Liberty County	
sec. 6, SE1/4NE1/4, and E1/2SE1/4;	120.00
sec. 7, E1/2;	320.00
sec. 8, W1/2SW1/4;	80.00
sec. 17, W1/2W1/2;	160.00
sec. 18, N1/2NE1/4;	80.00
sec. 19, lots 1 to 9, inclusive, Part of MS 3381, Part of MS 3380, N1/2NE1/4, NE1/4NW1/4, SE1/4SW1/4, and SW1/4SE1/4;	620.73
sec. 20, lots 1 to 5, inclusive, Part of MS 3380, W1/2NE1/4, SE1/4NE1/4, NW1/4, and NW1/4SE1/4;	466.16
sec. 29, lots 1 to 5, inclusive, and 8 to 10, inclusive, SW1/4NW1/4, N1/2SW1/4, and SW1/4SW1/4;	385.70
sec. 30, lots 1 to 4, inclusive, S1/2NE1/4, E1/2W1/2, and SE1/4;	544.80
sec. 31, lot 1, Part of MS 3418, E1/2NE1/4, NW1/4NE1/4, and NE1/4NW1/4;	251.70
sec. 32, lots 1 to 3, inclusive, E1/2NE1/4, and SW1/4NE1/4;	211.68
East Butte Total	4,322.43

Total for the Sweet Grass Hills ACEC	7,579.82
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A Secretary Order dated September 2, 1955, withdrew 572 acres to the Bureau of Reclamation (BR). This withdrawal is located on the southeast side of East Butte (lots 1, 2, 3, 4, 5, 8, and 9, and SW1/4NW1/4, N1/2SW1/4, and SW1/4SW1/4, sec. 29, lots 3, and NE1/4, sec. 30, T.36N., R.5E., PMM). The purpose of the withdrawal was to provide a source of rip-rap for the Marias River/Tiber Dam irrigation project. This withdrawal was addressed in the proposed final West HiLine RMP (BLM, 1988a). The withdrawal review process is still ongoing, at the current stage of the review process, BR concurs with BLM to revoke the withdrawal on all except 40 acres (lot 3, sec. 32, T.36N., R.5E.).

The FWS acquired 760 acres of land in Middle Butte. An additional 680 acres have an easement restricting water use. These lands are managed by the FWS for waterfowl production.

West Butte contains a withdrawal for the international boundary with Canada and the United States. This withdrawal consists of 14.52 Federal acres and 14.56 private acres. This withdrawal is managed by the International Boundary Commission, United States and Canada.

CULTURAL RESOURCES

The Sweet Grass Hills and the surrounding glaciated plains have evidence of human use from prehistoric through historic times. Prehistoric sites include extensive habitation sites, buffalo hunting complexes, and vision quest structures. Habitation sites typically include tipi rings, lithic debris, and stone cairns. The prehistoric site density of this portion of the Lewistown BLM District has been estimated at 6 to 7 sites per section on undisturbed terrain (Ruebelman, 1983).

Little of the study area has been inventoried on the ground for archaeological remains. However, all three buttes are known to contain prehistoric stone features thought to be related to vision questing. "The peaks and high ridgelines on East, Gold and West Buttes, contain a series of stone structures. Many of these features are believed to be associated with vision questing or ritual activity, others may be associated with hunting or were used as trail markers" (SHPO, 1992).

The unique geography of the hills made them an important source of a variety of sacred and medicinal plants, including sweetgrass (*Hierochloa odorata*), otherwise not locally available on the extensive plains. The unique geology of the hills also made them important for the extraction of various mineral resources for Native Americans and later for white miners.

The Sweet Grass Hills vicinity is known to have been an important hunting area historically, particularly for buffalo. Early accounts report buffalo hunting parties of Assiniboine, Blackfeet, Plains Cree, Gros Ventre and others in the vicinity of the Sweet Grass Hills (SHPO, 1992). In August of 1874, Captain W.J. Twining who was a member of the international boundary survey party climbed one of the buttes and saw a buffalo herd moving south that was so great in size he could not see the end of it in either direction (Ewers, 1958).

The Sweet Grass Hills were part of the Indian Reservation common to several tribes that was created by the Treaty of 1855. The Sweet Grass Hills were included in the ceded area of the 1887 agreement which was ratified by Congress in 1888. The ceded lands were open to the public after May 1, 1888 (Foley, n.d.).

Historic use of the area during the last 100 years includes ranching, farming and mining as well as historic use by Native Americans for religious purposes such as gathering sacred materials and vision questing. Historic use of the area dating to this period is still evident on the landscape. Both the Middle and East Buttes have remnants of early mining. Placer mining on Gold Butte (Middle Butte) is known to have produced 1,400 fine ounces of gold and 90 fine ounces of silver (Hubbard, 1966). Some early gold production was evidently illicit. Indian Agent Young complained to his superiors in September 1885 that he had no luck removing the miners from the Sweet Grass Hills (Foley, n.d.). The Power Brothers of Fort Benton shipped \$2,500 worth of gold from the Sweet Grass Hills in July 1887 (Foley, n.d.), although as noted earlier, the Sweet Grass Hills were part of the Blackfeet Indian Reservation until 1888 when the treaty was ratified by Congress. Coal production in the area dates to the 1890s (Hubbard, 1966). West Butte produced coal until World War II (McDermott, 1992).

There are traditions among several plains tribes about the Sweet Grass Hills (BLM, 1993b). These traditions relay events which occurred in the vicinity of the Sweet Grass Hills or in the Hills proper. The Sweet Grass Hills are remembered as an area important for hunting and camping as well as the area of numerous intertribal battles (SHPO, 1992).

There are also more specific references to the Sweet Grass Hills. In particular, the historic associations of the Devil's Chimney Cave among the Blackfeet, Assiniboine and Cree (BLM, 1989b). The Chippewa-Cree consider the Sweet Grass Hills and especially Devil's Chimney Cave historically important as well as sacred. According to their oral tradition, this is where the creator decided the future of the earth and of man. "The creator will return here at the end of

the world and awaken the spirits of those who have left” (BLM, 1989b).

Chief Broken Arm, signatory to the Stevens Treaty of 1855, vision quested at the Cave as did the legendary Chief Big Bear. Big Bear received a vision instructing him to make the “Chief’s Son’s Hand” medicine bundle. This medicine bundle is believed to be the one referred to in David Mandelbaum’s “The Plains Cree,” and now at the American Museum of Natural History (BLM, 1989b).

Bull Lodge of the Gros Ventre (Atsina) vision quested on Middle Butte (Hartmann, 1955). Among the Blackfeet, the legendary figure Scarface received power from a mountain spirit on East Butte. Calf Tail and Mountain Chief received visions on the Middle Butte (SHPO, 1992).

Sweet Grass Hills National Historic District

The Montana SHPO developed a draft National Register nomination for the Sweet Grass Hills as a historic district in 1992 though the draft nomination was never finalized nor were formal boundaries ever established. However, the BLM has determined that the Sweet Grass Hills are eligible for inclusion in the National Register of Historic Places and the SHPO has concurred in that determination (SHPO, 1995).

Current Spiritual Use/American Indian Religious Freedom Act (AIRFA) Concerns

The Sweet Grass Hills have been identified by Native American traditionalists as an important location for traditional religious practices (BLM, 1987). Concern has been expressed about disruption of traditional practices in the Sweet Grass Hills resulting from visual and audible intrusions to the natural environment. The concerns were expressed to the BLM in the context of environmental review of proposed mineral explorations on East Butte (BLM, 1986b and 1989b).

Representatives of the Assiniboine, Blackfeet, Chippewa-Cree, Gros Ventre (Atsina), Kootenai, and Salish have all expressed concern about preserving the sacredness of the Sweet Grass Hills. These concerns have been expressed both at the individual level and by tribal governments (BLM, 1986b and 1989b).

In traditional Plains Indian Culture, spiritual life is integral to daily life. Fasting and vision questing are important elements of this spirituality. Vision questing is practiced by all of the groups known to have ranged into the Sweet Grass Hills. A vision quest involves an individual petitioning supernatural powers for aid. It is commonly done in isola-

tion from the community for a period of time, while fasting, praying and making offerings (Deaver, 1986). Fasting, vision questing and other forms of traditional worship require certain conditions to be successful. Fasting and vision questing require isolation from audible and visual interferences or disturbances. According to an Assiniboine elder, “The fasting must be carried on alone and in a quiet, isolated area with no unnatural distractions” (BLM, 1990).

The Blackfeet believe in an animate universe that contains powers which may be petitioned by man (Deaver, 1986). Their cosmology is based on a three-tiered conception of the world: Above Persons, Ground Persons, and Underwater Persons. One of the Above Persons, Napi, is responsible for creating the major physical features of the Blackfeet world. During creation he lays down to rest and these resting places are called Napi figures. The Sweet Grass Hills are such a feature (Deaver, 1986).

These classes of supernatural beings include some with human form and some with animal form. These supernatural beings have powers which they can transfer to men if they choose to do so. These powers may be sought deliberately or may simply come when a man is alone. The powers come through dreams in which the supernatural being visits and instructs the individual (Deaver, 1986).

Dreams of power normally came to a young man who actively sought supernatural aid (Ewers, 1958). This was done by going to an isolated spot some distance from camp, alone and on foot. The young man fasted and prayed to the powers. The spirit appeared to him and showed him certain sacred objects and how to make and care for them. After returning home, the young man made the articles according to the instructions received from the spirit. These items comprised the contents of his personal medicine bundle. Although not the power itself, these were important symbols of the power. Unless the possessor formally transferred the power of the bundle, he retained it until death (Ewers, 1958).

Some medicine bundles came to be more highly respected than others. If a man prospered and had great success as a warrior or the wealth of many horses, his power was considered unusually potent and that he could transfer that power (Ewers, 1958). According to Blackfoot elder John (Buster) Yellow Kidney, many of the medicine bundles still in use came from the Sweet Grass Hills (Blackfeet Encampment, September 24, 1993).

Mike Swims Under, a Blackfoot elder, was told by his father that the Sweet Grass Hills were sacred and must be preserved. According to him they are considered the most important place to get sweetgrass and sweetpine for ceremonies as they are the most powerful sweetgrass and

sweetpine. He also reports fasting in the Sweet Grass Hills saying "...people fasted there for power to get a good living and good luck" (BLM, 1986b).

The Chippewa-Cree tribe is composed of Plains Cree, Plains Ojibiwa, and Metis who joined together as a political entity when trying to find a place to live (Deaver, 1986). Not all of these people became associated with the Rocky Boy Reservation and some Montana communities have ethnic enclaves which continue to practice their traditional religion.

The worldview of the traditional Plains Cree and Plains Ojibiwa included the concept of the Manito, a supernatural force that pervades the natural world, within a four-tiered universe. Each tier is more beautiful than the lower one. The highest tier is the home of the Great Manito, sometimes regarded as the creator. Sweetgrass Man is on this level and is sometimes depicted as the leader of all other Manitos (Deaver, 1986).

A value common to many Native Americans is the "spiritual" quality of land. According to Deaver (Deaver, 1986), "Disrespectful manipulation of the earth in this worldview is seen as desecration." In the traditional view such desecration could result in serious consequences. This concern was expressed by the late Art Raining Bird in connection with past mineral exploration on East Butte:

No one ever thought they'd be excavating there. Its as if they're going to take down the shrine meant for the Native Americans. I don't agree with that. If that ever happens, unexplainable things will begin to happen (BLM, 1986b).

Past hardrock mineral exploration in the Tootsie Creek area of East Butte was formally opposed by the Blackfeet and the Chippewa-Cree. In 1986, the Blackfeet Tribe appealed BLM's decision to approve mineral exploration by Santa Fe Pacific Mining. In 1989 the Chippewa-Cree appealed BLM's decision to approve mineral exploration by Cominco American Resources. A stay was not granted in either case and the exploration occurred. In spite of these past disturbances, Native American groups maintain that the area is still sacred and must be protected from further environmental change (BLM, 1995).

Prior to the 1986 and 1989 exploration projects, a field meeting was held. In these field meetings, both the Chippewa-Cree and the Blackfeet emphasized the significance of Devil's Chimney Cave and the need to protect it from physical and spiritual intrusion (BLM, 1993a). In addition to the cave, Tootsie Creek and the springs that feed it, Mount Brown, Mount Royal, and areas of traditional paint gathering in front of the cave were identified as concerns by the Original Chippewa-Cree in this area (BLM,

1986b). The Tootsie Creek basin therefore appears to contain a concentration of traditionally important areas.

Today, the Chippewa-Cree Tribe considers the Devil's Chimney Cave and the entire Sweet Grass Hills irreplaceable to group identity (BLM, 1989b). Even so, providing information on the importance of the Sweet Grass Hills places the Tribe in a dilemma between the need to protect their religious freedoms and traditionally required privacy and the need to provide information to protect this sacred place (BLM, 1989b). Protection is therefore not only an issue of physical protection to the place, but also an issue of preserving the sanctity of the traditions associated with the place.

The Chippewa-Cree, Blackfeet, Assiniboine, Gros Ventre, Salish and Kootenai have all expressed the view that any alteration of the natural landscape of the Sweet Grass Hills is unacceptable and unmitigateable (BLM, 19b93). It is at this level that any attempt to further define what is "sacred" becomes a moot point in the traditional view. As Pikuni Traditionalist Floyd "Tiny Man" Heavy Runner said "we could give you the information, but we would have to expel the members who gave the information because those properties exist only in the Blackfeet life, we must only use our transfer system to pass on information about our properties" (BLM, 1993b).

Although the specific details of "why" the Sweet Grass Hills are spiritually important may be inappropriate for public discussion, the attributes which must be retained to preserve their spiritual qualities to Native American Traditionalists are suitable for discussion. Noise from vehicles or equipment is disruptive to spiritual practices (BLM, 1986b). Some ceremonies associated with the Tootsie Creek area require fresh running water nearby (BLM, 1989b). According to Chippewa-Cree traditions, the Tootsie Creek area contains "ores of healing quality" but they fear that mining would turn the waters bad and make the area a waste land (BLM, 1986b and 1989b). Physical disturbance to the land itself and visually intrusive modern constructions are both incompatible with these values. Consequently, the tribal government of Rocky Boy's Reservation has formally gone on record as opposing both mining claim entry and oil and gas leasing in the Sweet Grass Hills (BLM, 1995). Roads are visually intrusive and also have the potential to provide access to other disruptive activities. In summation, to protect the spiritual qualities of the Hills to Native American Traditionalists requires that the area be "protected from environmental change" (BLM, 1986b).

It is difficult to estimate the current Native American spiritual use of the Sweet Grass Hills numerically. As previously discussed, privacy is a critical element to traditionalists. The Hills retain the solitude and natural land-

scapes required for these practices. The Hills also provide plants and mineral resources needed for traditional spiritual practices. Both the Blackfeet and the Chippewa-Cree have expressed concern about traditional “paints” or “medicines” gathered on East Butte (BLM, 1986b and 1989b). According to tradition, all four paints necessary for the Sundance are collected on East Butte (BLM, 1989b).

Further, representatives of the Blackfeet, Chippewa-Cree, Salish, Kootenai, Assiniboine and Gros Ventre have all expressed concerns about preserving the sacred qualities of the Hills. It therefore seems apparent that protecting the Sweet Grass Hills from environmental change is a shared value among the tribes of the Northern Plains.

SOCIAL CONDITIONS

Population

Liberty County’s population was 2,295 in 1990, which was a 1.5 percent decrease from 1980. In 1990, less than 1 percent of the county’s population was Native American. Chester is the County’s only incorporated city, with a 1990 population of 942. This represents a 2.2 percent decline in population since 1980, when the population totaled 963 (U.S. Bureau of the Census, 1990).

Toole County’s population was 5,046 in 1990, which was a 9.2 percent decrease from 1980. In 1990, 2 percent of the county’s population was Native American. Shelby, Sunburst, and Kevin are incorporated cities in Toole County. The population of these cities declined between 1980 and 1990. Shelby, the county seat, had a 1990 population of 2,763 compared to the 1980 population of 3,142, a 12.1 percent decline in population.

The two counties are sparsely populated, averaging 2.2 people per square mile in 1990. These rural counties have been losing population for decades. The population of the counties in 1970, 1980, and 1990 is shown in Table 3.3.

**TABLE 3.3
POPULATION OF LIBERTY AND TOOLE COUNTIES**

	Population 1970	Population 1980	Population 1990	% Change (1980 - 1990)
Liberty	2,359	2,329	2,295	-1.5
Toole	5,839	5,559	5,046	-9.2

Source: U.S. Bureau of Census, 1993

Social Conditions

Social well being indicators for Liberty and Toole Counties include both positive and negative factors. Positive factors include the area’s remoteness and sparse population which result in freedom from urban problems such as high crime rates and overcrowding. Divorce rates are low compared to state statistics, outdoor recreational opportunities are plentiful and family ranching operations remain predominant.

Liberty and Toole Counties are lacking some basic services. The number of physicians per 100,000 is lower than the state and national average. Liberty County has a lower proportion of people in the working age groups (18 to 65 years) than the state as a whole. People in these age groups typically move out of the area to attend school or find employment. However, residents of traditional ranching areas in the western United States typically feel this lifestyle offers a very positive environment for individuals and families. Toole County has a higher proportion of people in the working age groups. This could be due to oil and gas development in this county. Local residents, particularly area ranchers, Native Americans from a variety of tribes, and some Montana environmental protection organizations are vocal in their opposition to exploration and mining in the Sweet Grass Hills. Though the actions under consideration have been exploration, many fear it would ultimately result in mining. Therefore it is difficult to separate concerns about exploration from those associated with mining. Concerns include damage to surface and groundwater supplies, loss of the area’s natural beauty, disturbance of wildlife habitat, and loss of recreation opportunities. Concerns about exploration and mining in the Sweet Grass Hills are long standing: they were documented during the preparation of the West HiLine RMP (BLM, 1987 and 1988b), during public comment for the East Butte Exploration Project in 1989, and from comments received during scoping for this EIS (BLM, 1993b). It should also be noted that some support for exploration was expressed. Some individuals indicated mining could be conducted in an environmentally safe manner. Others expressed concern for private property rights. Concerns are also discussed in the Cultural Resources section.

ECONOMIC CONDITIONS

The economy of these counties is based on their abundant natural resources. These resources include the land, which is used for crop and livestock production, mining, and oil and gas production, and the water and wildlife that offer outdoor recreation opportunities. Most of the counties’ employment and personal income is derived from these

natural resources. There are no major retail trade centers in the two counties.

The total number of jobs declined between 1980 and 1988 as would be expected, based on the decline in population. The counties lost jobs due to low commodity prices including oil and gas, drought, and the general business recession in the early 1980s (Table 3.4). The percentage of farm proprietors in the counties is double the statewide average, but the numbers continue to decline. Wage and salary employment has provided the majority of new job opportunities in the area since 1970.

Farm income accounted for 16 percent of total personal income in 1990, approximately the same as in 1980 after declining during the 1970s (Table 3.5). While farm earnings and employment will continue to play an important role in the economy, it will remain volatile in the short term. The trend toward farm consolidation and mechanized labor will continue to reduce jobs. Unless the decline in jobs is arrested, the population decline will continue.

Toole County is dissected by the Burlington Northern Railroad's northern mainline and by Interstate 15, a major north-south component of the emerging Rocky Mountain Trade Corridor. Shelby is becoming a vital link in the intermodal transportation network in the northern portion of the corridor.

Jobs created by the transportation, recreation and tourism industries, including hunting, can offer alternatives to those displaced agriculture and oil field workers. Jobs in the transportation sector may require skills transferable from the oil fields while many of the jobs in the food service and motel business are entry level and provide initial work experiences. Other jobs resulting from increased tourism may pay substantially higher wages, including travel agents, outfitters, resort managers, and retail business owners to name a few. The recreation and tourism industry can add diversity and stability to the economy of the area. A recently released study by the Montana Institute for Tourism and Recreation Research states that the economic impacts and jobs created by non-resident expenditures have been underestimated in the past (University of Montana, 1989). Enhancing recreational opportunities can play a key role in the area's economic future.

Employment

The total number of jobs in Liberty and Toole Counties was 4,231 in 1988, down 6.5 percent from 4,527 in 1980 (Table 3.4), which was near the peak of oil and gas activity spurred by high prices and tight supplies world-wide.

Total jobs include both sole proprietors, historically farmers and ranchers, and wage and salary employment. Wage and salary employment was 62 percent of the total employment in 1970, and 66 percent the total in 1990, down from 71 percent in 1980 (Table 3.5). The statewide average for 1990 was 76 percent. The high percentage of wage and salary jobs is due in large part to the oil and gas development and the construction of an intermodal transportation hub at Shelby in the mid 1980s.

The decrease in the number of farm proprietors since 1970 is a reflection of the overall general consolidation in the agriculture sector that has led to a decline in the number of farms statewide. The increase in the number of nonfarm sole proprietors parallels the increase in oil and gas activity early in the decade and the increases in trade and tourism along the I-15 corridor later in the decade.

Expenditures for hardrock exploration in the Sweet Grass Hills area of Toole and Liberty Counties since 1983, are estimated to be between \$1.5 and \$2 million, occurring during the field season between May and October (Lehmann, 1992). The average annual expenditures since 1983, are estimated to be \$150,000 to \$200,000. Expenditures include wages, fuel, equipment rentals, repairs, food, lodging and contract services (such as construction, drilling and helicopter services). As exploration dollars are spent (direct expenditures) they circulate through the local economy generating additional rounds of spending (secondary spending). The sum of direct expenditures and secondary spending is known as the total economic impact. Assuming 50 percent of average annual expenditures have been spent locally, the total economic impact is estimated to have been between \$127,000 and \$170,000 annually. Crews have consisted of up to five individuals during the field season with additional employment supplied by contractors (Lehmann, 1992). Most of these personnel have been based in Chester or Shelby. Additionally, spending activity is estimated to have contributed up to two jobs in the local area. Thus, total annual employment attributable to exploration activity is estimated to be about seven jobs.

Income

Total personal income is the most comprehensive measure of all income flows in an area. It includes income from wages and salaries, employee benefits, sole proprietors, property income (interest, dividends, and rent), and government transfer payments (social security, medical payments, and unemployment insurance). Farm income and nonfarm income for selected years are shown in Table 3.5.

TABLE 3.4

EMPLOYMENT IN LIBERTY AND TOOLE COUNTIES

	1970	1980	1988
Total	4,084	4,527	4,231
Wage & salary	2,530	3,193	2,782
Proprietors	1,554	1,334	1,449
Farm	864	557	507
Nonfarm	690	777	942

Source: Bureau of Economic Analysis, U.S. Department of Commerce, 1993

TABLE 3.5

**PERSONAL INCOME IN LIBERTY AND TOOLE COUNTIES
(Thousands of 1990 Dollars)**

	1970	1980	1988
Personal Income	130,731	128,400	132,826
Nonfarm Income	74,667	107,553	109,132
Farm Income	56,064	20,847	23,694

Source: Bureau of Economic Analysis
U.S. Department of Commerce
REIS, 1993

From 1970 to 1990 the total personal income of the counties increased by less than 2 percent, measured in constant dollars after adjusting for inflation. However, per capita personal income increased 13.4 percent, from \$15,950 in 1970 to \$18,094 in 1990 due to the decline in population (Tables 3.3 and 3.5).

The changing nature of the local economy evident in the employment data, is further reflected in the diverging trends in nonfarm and farm incomes. Nonfarm income continues to grow while farm earnings, which accounted for 43 percent of total personal income in 1970, have fallen to 18 percent of the total in 1990. While farm income rebounded in late 1980s to 23.7 million dollars, this was a 58 percent decrease from 1970. On the other hand nonfarm income increased 46 percent over the period due to the increase in employment resulting from oil and gas development and retail trade.

Property Tax

Property taxes are calculated on the assessed value of the property, the statutory rate for the class of property that it belongs to, and the mill levy in the jurisdiction in which the property is located. The market values, taxable values, and property taxes levied in 1990 for the counties is shown in Table 3.6.

TABLE 3.6

**PROPERTY VALUES AND TAXES FOR LIBERTY AND TOOLE COUNTIES
(Millions of Dollars)**

	Market Value	Taxable Value	Taxes
Liberty	115.1	9.4	2.5
Toole	224.2	17.6	4.3
Total	339.3	27.0	6.8

Source: Biennial Report of the Montana Department of Revenue, 1988-1990.

BLM Contribution to Local Revenue

The BLM's principal contribution to local revenues arises from the value of produced Federal oil and gas in the area. The counties assess a Local Government Severance Tax and a Net Proceeds Tax on the value of the oil and gas produced. Federal lands accounted for 14.4 percent of the oil and 12.7 percent of the gas produced in the area in 1991.

The BLM administers a number of programs which provide for disbursements to local governments. The major sources of these revenues are Federal mineral and grazing leases and payments in lieu of taxes (PILT).

Mineral Receipts: The Mineral Lands Leasing Act of 1920, as amended, provides that one-half of the bonuses, rents, and royalties derived from Federal mineral leases be returned to the state and counties for stated purposes. Federal oil production for the five year period FY 1988 to FY 1992 averaged 18 thousand bbls in Liberty county and 100 thousand bbls in Toole County. Federal gas production for the same period was 164 thousand mcfs in Liberty County and 727 thousand mcfs in Toole County. Federal receipts averaged \$491,000 annually of which 50 percent was returned to the state.

Grazing Fees: The Taylor Grazing Act stipulates that states receive a 12.5 percent share of grazing fees collected inside grazing districts (Section 3 payments). The states also receive a 50 percent share of grazing fees collected outside organized grazing districts (Section 15 payments). Under the law, the state legislature of each state decides how the money is spent for the benefit of the counties. The total of the Section 15 and Section 3 grazing fee receipts for FY 1992 were \$3,697 for Liberty county and \$8,440 for Toole County.

Payment In Lieu of Taxes (PILT): The Federal government makes payments to counties in lieu of taxes for certain

Federal lands located in those counties. The amount of PILT payments is calculated using two different formulas; the one yielding the largest amount to the county determines the level of PILT. The PILT payments for FY 1992 were \$24,749 for Liberty County and \$32,195 for Toole County. Each year funding for PILT must be appropriated by Congress, and actual amounts paid to the counties must be prorated based on the funding level and the amount the county is due through the formula calculations. Generally, the amount appropriated for PILT is less than the full funding level, so a percentage of the full amount due is distributed to the counties.

CHAPTER 4 - ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This chapter describes the environmental, social, and economic consequences of implementing the alternatives presented in Chapter 2. The impacts were identified and evaluated by an interdisciplinary team of resource specialists and are presented here for the following environmental elements; locatable minerals, oil and gas, soils and vegetation, air quality, watershed, wildlife, recreation, lands, cultural resources, social, and economic.

This chapter quantifies the specific impacts, where possible, and discusses where the impacts would occur. The significance of the impact, including magnitude, duration, and incidence are discussed where possible. The impacts to each environmental element include direct, indirect, and cumulative impacts.

General impacts from oil and gas leasing and development are described in Appendix 1.3, Section F, of the final West HiLine Resource Management Plan (BLM, 1988a). Specific cumulative impacts are discussed in this document for the Sweet Grass Hills study area based on the reasonably foreseeable oil and gas development activity described in Appendix B.

ASSUMPTIONS

Reasonably foreseeable future actions include potential land acquisitions, oil and gas exploration and development, and hardrock exploration and development. Reasonably foreseeable future actions are the basis for assessing cumulative impacts.

The hardrock exploration in the Sweet Grass Hills has not resulted in the identification of a mineable ore body at this time. Statistical analysis of exploration programs show that one in fifty drilling projects will find ore-grade mineralization and one in ten ore-grade mineralized areas results in a mine (Peters, 1987). For the purposes of the impact analysis there is a 10 percent chance that a mine would ever be developed in the Sweet Grass Hills. This activity would most likely occur in the Tootsie Creek area of East Butte. The reasonable foreseeable development (RFD) scenario for locatable minerals is described in Appendix A. The likelihood of additional exploration and mine development is shown in Table 4.1. Under Alternatives B and D the likelihood of additional locatable mineral development is very low and low, however due to the management direction to pursue relinquishment of valid claims through purchase, exchange, condemnation, or conservation easements the development scenarios described in Appendix A are not reasonably foreseeable.

TABLE 4.1

LIKELIHOOD OF ADDITIONAL LOCATABLE MINERAL DEVELOPMENT IN THE SWEET GRASS HILLS

Activity	Alternative A	Alternative B	Alternative C	Alternative D
Exploration	Very High	Low	High	Moderate
Mine (<1 to 10 Million Tons)*	Moderate	Very Low (Not Reasonably Foreseeable)	Low	Low (Not Reasonably Foreseeable)
Large Open Pit Mine	Not Foreseeable			

*Hypothetical mine scenarios described in Appendix A.

Based on the RFD scenario for oil and gas resources (Appendix B), approximately 20 wells could be drilled on Federal minerals within the study area during the next 10 to 15 years. Of these, six could be completed as producers. The average disturbance per well is estimated at three acres. This includes well pad, road, and associated ancillary facilities.

With implementation of Alternative A the foreseeable hardrock exploration and development described in Appendix A could occur on either Federal minerals, private minerals, or most likely a combination of Federal and private minerals.

With implementation of Alternative B the foreseeable hardrock exploration and development described in Appendix A is assumed not to occur.

With implementation of Alternative C the foreseeable hardrock exploration and development described in Appendix A could occur on either private minerals, Federal minerals (valid mining claims) or most likely a combination of private and Federal minerals. However, it is unlikely that a mine would be developed under this alternative since a withdrawal further limits opportunities for economies of scale that would otherwise be present with adjacent lands being open to mineral entry.

With implementation of Alternative D the foreseeable hardrock exploration and development described in Appendix A is assumed not to occur. The remaining Federal minerals within the study area would be open to mineral entry. However, mineral development outside the ACEC is not reasonably foreseeable.

IMPACTS TO LOCATABLE MINERALS

From Land Tenure Adjustment

Alternative A: There would be no impact to locatable minerals.

Alternative B: On acquired minerals, exploration and mining activities would not occur with a withdrawal.

Alternative C: Acquisitions adjacent to the ACEC would have a negative impact to exploration and development as these areas would be withdrawn.

Alternative D: The impacts would be similar to those discussed in Alternative C, except the potential exists that more mineral estate could be withdrawn because lands may be acquired through condemnation.

From Off-Road Vehicle Use

Alternatives A, B, C, & D: There would be no impact to locatable minerals.

From Oil & Gas Leasing and Development

Alternative A: Conflicts with fluid minerals could occur if hardrock minerals are proposed to be developed at the same location as an oil or gas well. The likelihood that a conflict would occur is remote, since 95 percent of the area with a high occurrence potential for precious metal resources has slopes greater than 30 percent and is subject to an oil and gas stipulation that could preclude surface occupancy.

Alternatives B, C, & D: There would be no impact to locatable minerals.

From Locatable Mineral Development

Alternative A: BLM land within the study area would remain open to mineral entry. The location of mining claims and continued exploration of Federal lands within the three butte area would result in further surface disturbance and additional information about the mineral potential. Table 4.2 shows the acres of mineral occurrence potential by management category for Federal minerals in the Sweet Grass Hills under Alternative A.

TABLE 4.2

LOCATABLE FEDERAL MINERAL OCCURRENCE POTENTIAL BY MANAGEMENT CATEGORY FOR ALTERNATIVE A (Acres)

Potential	Open	Restricted	Closed	Total
High	4,864	4,434	572	9,870
Moderate	3,518	970	0	4,488
Low	1,418	0	0	1,418
None	3,763	226	0	3,989
Total	13,563	5,630	572	19,765

Note: "Open" lands are open to location under the mining laws and are not special category lands such as ACECs, WSAs, wild and scenic rivers, areas closed to ORV use, etc. as defined in 43 CFR 3809.1-4. Lands in the "closed" category have been withdrawn, or segregated from operation of the mining laws and are not available for mineral entry. "Restricted" lands remain open to operation of the mining laws and are available for mineral entry, exploration, and development. These restrictions do not allow operations under the Notice provision of the regulations (a Plan of Operations is necessary) and can result in increased environmental mitigation costs.

Under this alternative the proposed exploration plan for the Royal East Joint Venture project could be approved in the future. This would result in additional roading and drilling in the Tootsie Creek drainage of East Butte. The range of total disturbance would be between 21 and 23 acres (BLM, 1993a). Additional information about the size and extent of gold and silver mineralization gained by this activity would improve the mineral resources information available which is currently minimal.

Appendix A describes the reasonable foreseeable development that is anticipated for the Sweet Grass Hills. Further exploration, and a hypothetical mining operation are described. The mining activity is not predicted to occur unless future exploration discovers an economic deposit.

An underground mine operation would extract ore from selected mineralized areas and process the ore by crushing and vat leaching. The tailings from the vats would be disposed of in a designed facility.

If the exploration was successful in the discovery of sufficient reserves, an open-pit mine with a cyanide heap leach facility could be constructed. This type of development would result in the extraction of gold and silver from the deposit.

Currently 572 acres in East Butte are not available for mining claim location because they are withdrawn to the Bureau of Reclamation (BR) for quarry material. Through the withdrawal review process, the BLM and BR recommended that 532 acres be returned to BLM administration. This 532 acres would be open to mineral entry when the withdrawal is revoked.

Alternative B: This alternative would withdraw 19,765 acres of Federal minerals from locatable mineral entry in the study area. The 6,328 acres of Federal minerals within the Sweet Grass Hills ACEC are rated high occurrence potential for precious metal resources (BLM, 1988a). Table 4.3 shows the acres of mineral occurrence potential by management category for Federal minerals in the Sweet Grass Hills under Alternative B.

Currently there are a total of 20 active mining claims located within the area; 14 on East Butte and six on Middle Butte (Appendix A). The BLM conducted a validity exam of existing claims in the East Butte area (14 claims). The results indicate eight of the claims meet the test of discovery under the mining law and are valid (Figure 2).

Further mineral exploration and development would not be approved with implementation of this alternative. The use of condemnation proceedings to acquire any valid existing rights would be a negative impact to mineral exploration

TABLE 4.3

LOCATABLE FEDERAL MINERAL OCCURRENCE POTENTIAL BY MANAGEMENT CATEGORY FOR ALTERNATIVES B AND C (Acres)

Potential	Open	Restricted	Closed	Total
High	0	0	9,870*	9,870
Moderate	0	0	4,488	4,488
Low	0	0	1,418	1,418
None	0	0	3,989	3,989
Total	0	0	19,765	19,765

*Eight mining claims on East Butte meet the test of discovery under the mining law and are valid (~100 acres). However, this area would be closed to further mining claim location.

and development. The Federal minerals in West Butte would not be open to location under the mining law and no further exploration activity would be allowed. The prospective value of this land would not be further defined. There has been no drilling activity on West Butte in the past and the extent of exploration has been limited to surface sampling and mapping. The results of this activity have shown potential for mineral deposits in the area. However, without further exploratory drilling the extent, depth, and grade of mineral deposition would not be known.

Most of the remaining Federal minerals in the study area have been rated as having low potential for occurrence of locatable minerals. Past activity in most of this area has been limited to some placer mining along alluvial creek channels downstream from the mountain terrain. Other than these alluvial deposits the prospective value of the area for locatable minerals is low with little interest in claim location or exploration. Withdrawal of this land would have no impact on mineral resources.

Under this alternative the existing BR withdrawal for riprap material near East Butte would be recommended for termination. This would have a minor negative impact by reducing the amount of riprap material available. However, the availability of this material on nearby state and private lands would minimize the impact.

Alternative C: This alternative would withdraw 19,765 acres of Federal minerals from locatable mineral entry in the study area. The 6,328 acres of Federal minerals within the Sweet Grass Hills ACEC are rated high occurrence poten-

tial for precious metal resources (BLM, 1988a). Table 4.3 shows the acres of mineral occurrence potential by management category for Federal minerals in the Sweet Grass Hills under Alternative C.

The BLM conducted a validity exam of existing claims in the East Butte area (14 claims). The results indicate eight of the claims meet the test of discovery under the mining law and are valid (Figure 2). The proposed Royal East Joint Venture Exploration Project (BLM, 1993a) could be processed in the future and some, or all, of the proposed activity could occur. This would improve the mineral resources information available which is currently minimal. If the exploration was successful in the discovery of sufficient reserves, the hypothetical mining scenario described in the RFD could occur (Appendix A).

This alternative would have a negative impact on high potential mineral resource lands where no valid claim exists. All these lands would be withdrawn from mineral entry and no further information about the prospective value of the land could be obtained. This applies to all Federal lands on West Butte and the majority of those lands on Middle and East Buttes.

Most of the remaining Federal minerals in the study area have been rated as having low potential for occurrence of locatable minerals. Past activity in most of this area has been limited to some placer mining along alluvial creek channels downstream from the mountain terrain. Other than these alluvial deposits the prospective value of the area for locatable minerals is low with little interest in claim location or exploration. Withdrawal of this land would have no impact on mineral resources. It is unlikely that a mine would be developed under this alternative since the withdrawal further limits an area that only had moderate development potential before the withdrawal.

Under this alternative the existing BR withdrawal for riprap material near East Butte would be recommended for termination. This would have a minor negative impact by reducing the amount of riprap material available. However, the availability of this material on nearby state and private lands would minimize the impact.

Alternative D: The impacts of this alternative would be similar to Alternative B, except less Federal minerals would be withdrawn. Most of the 6,750 acres of Federal minerals withdrawn are rated high occurrence potential for precious metal resources (BLM, 1988a). The majority of the land has high development potential. Table 4.4 shows the acres of mineral occurrence potential by management category for Federal minerals in the Sweet Grass Hills under Alternative D. This alternative would have no impact on those lands left open to mineral entry.

TABLE 4.4

LOCATABLE FEDERAL MINERAL OCCURRENCE POTENTIAL BY MANAGEMENT CATEGORY FOR ALTERNATIVE D (Acres)

Potential	Open	Restricted	Closed	Total
High	4,316	0	5,554*	9,870
Moderate	3,518	0	970	4,488
Low	1,418	0	0	1,418
None	3,763	0	226	3,989
Total	13,015	0	6,750	19,765

*Eight mining claims on East Butte meet the test of discovery under the mining law and are valid (~100 acres). However, this area would be closed to further mining claim location.

IMPACTS TO OIL AND GAS

From Land Tenure Adjustment

Alternatives A, B, C, & D: Acquisition of mineral estate gives the BLM the opportunity to manage oil and gas leasing options and to regulate timing, location, and other aspects of exploration or development activities. Therefore, on acquired lands, drilling and producing activities could be subject to more regulatory control.

From Off-Road Vehicle Use

Alternatives A, B, C, & D: ORV designations would not impact oil and gas development and exploratory activities. Administrative access and surface use is provided for under the terms of the lease subject to any attached stipulations.

From Oil & Gas Leasing and Development

Alternative A: Presently 13,156 acres of Federal minerals out of a total of 21,409 acres within the study area are leased for oil and gas. Current management practices would have no impact on future oil and gas leasing, exploration, or development. Table 4.5 shows the Federal mineral estate subject to the respective restrictions or closed to leasing in the Sweet Grass Hills study area for Alternative A.

Alternative B: Designation of the entire study area as no lease would impact future oil and gas exploration and development. Existing leases on 13,156 acres would continue under their current lease terms and stipulations allowing for future exploration and development. However, once those leases expire no new leases would be issued. Table 4.6

shows the Federal mineral estate subject to the respective restrictions or closed to leasing in the Sweet Grass Hills study area for Alternative B.

TABLE 4.5

**FEDERAL MINERAL ESTATE
SUBJECT TO STANDARD AND
SPECIAL RAPTOR STIPULATIONS,
NO SURFACE OCCUPANCY, OR
CLOSED TO OIL AND GAS LEASING -
ALTERNATIVE A (Acres)**

	Standard & Special Raptor Stipulations	No Surface Occupancy	Closed
West Butte	7,176	0	0
Middle Butte	5,161	0	0
East Butte	9,072	0	0
Total	21,409	0	0

TABLE 4.6

**FEDERAL MINERAL ESTATE
SUBJECT TO STANDARD AND
SPECIAL RAPTOR STIPULATIONS,
NO SURFACE OCCUPANCY, OR
CLOSED TO OIL AND GAS LEASING -
ALTERNATIVE B (Acres)**

	Standard & Special Raptor Stipulations	No Surface Occupancy	Closed
West Butte	0	0	7,176
Middle Butte	0	0	5,161
East Butte	0	0	9,072
Total	0	0	21,409

Current market conditions are not supportive for additional exploration and development of reserves. As a result, the existing leases would most likely expire before being thoroughly explored. Unless a discovery is made, most of these leases will expire at the end of their primary term (10 years).

Several of the existing leases share in production through communitization agreements or have actual production. These leases would remain in effect until such time as the

production ceases or the communitization agreement terminates.

The anticipated levels of drilling and exploration as identified in the oil and gas RFD (Appendix B) would be significantly reduced under this alternative. Based on the RFD, under Alternative B, it is anticipated that only one or two of the 20 wells anticipated to be drilled on Federal minerals would be drilled. It is still possible that the Federal lands could be entered into communitization agreements and share in the production from private wells within the spacing units. In order to participate in production, the BLM would have to make an exception to the no lease decision and lease those parcels of land with a no surface, no subsurface occupancy stipulation.

In some cases where the Federal minerals occur throughout a given spacing unit, that spacing unit would not be developed. Potential loss of revenues to the Federal and State governments could occur through drainage of the federal reserves. If drainage were not to occur there would be no impacts to the oil and gas as it would remain in the reservoir. However, there would be an economic loss to the Federal and State governments in terms of lost royalties and taxes. There could also be impacts to the local economy. The social and economic sections discuss these impacts in greater detail.

Alternative C: Under this alternative new leases issued within the study area, but outside the Sweet Grass Hills ACEC would be issued with standard stipulations and special raptor stipulations. New leases issued within the ACEC would be issued with a no surface occupancy stipulation.

Existing leases within the study area would continue under their current lease terms and stipulations allowing for future exploration and development. Several of the existing leases share in production through communitization agreements or have actual production. These leases would remain in effect until such time as the production ceases or the communitization agreement terminates. Table 4.7 shows the Federal mineral estate subject to the respective restrictions or closed to leasing in the Sweet Grass Hills study area for Alternative C.

Within the entire study area, the anticipated levels of drilling and exploration as identified in the oil and gas RFD would be slightly reduced under Alternative C. Although current market conditions are not supportive for additional exploration and development of reserves at this time, the lands would remain available for leasing in the future.

TABLE 4.7

**FEDERAL MINERAL ESTATE
SUBJECT TO STANDARD AND
SPECIAL RAPTOR STIPULATIONS,
NO SURFACE OCCUPANCY, OR
CLOSED TO OIL AND GAS LEASING -
ALTERNATIVE C (Acres)**

	Standard & Special Raptor Stipulations	No Surface Occupancy	Closed
West Butte	4,584	2,592	0
Middle Butte	4,495	666	0
East Butte	5,580	3,492	0
Total	14,659	6,750	0

Designation of the Sweet Grass Hills ACEC as available for leasing, but with a no surface occupancy stipulation, is not anticipated to have significant impacts to future oil and gas exploration and development. Under Alternative C, it is anticipated that 18 to 19 of the 20 wells estimated to be drilled on Federal minerals (based on the RFD) could be drilled. Only 1 or 2 wells would not occur because of the no surface occupancy restriction. The remaining 40 private or state wells foreseeable under the RFD could still be drilled and approximately 10 of those could enter into communitization agreements with the Federal mineral lessees.

The existing leases within the Sweet Grass Hills ACEC are currently subject to a controlled surface use stipulation that could preclude occupancy on slopes greater than 30 percent, or 20 percent on extremely erodible or slumping soils. Approximately 95 percent of the ACEC is on slopes exceeding 30 percent. Therefore, 95 percent of the current lease areas within the ACEC could be considered de facto no surface occupancy. In addition, the ACEC boundary is nearly concurrent with the igneous rock outcrops. Although there may be traps and reserves beneath the surface outcrop, the expense of drilling through an additional 2,000 feet of igneous rock in the current market, makes exploring for those reserves less economically attractive at this time. Drilling from the periphery of the igneous outcrops may be more cost effective and is technologically feasible.

There would be no potential loss of revenues to the Federal and State governments because of drainage under this alternative. However, there could be a moderate increase in well costs associated with the identified mitigation, if necessary. Requiring all casing strings to be cemented back to the surface would add approximately 3 to 10 percent to

the initial costs of drilling the wells. These impacts are discussed in greater detail in the economic section.

Alternative D: The impacts would be similar to those discussed in Alternative C, except no new leases would be issued for Federal minerals in the ACEC and 422 acres adjacent to the ACEC. There would be a slight potential for loss of revenues to the Federal and State governments because of drainage under this alternative. Impacts for existing leases would be the same as Alternative A should they be explored and/or developed. Table 4.8 shows the Federal mineral estate subject to the respective restrictions or closed to leasing in the Sweet Grass Hills study area under Alternative D.

TABLE 4.8

**FEDERAL MINERAL ESTATE
SUBJECT TO STANDARD AND
SPECIAL RAPTOR STIPULATIONS,
NO SURFACE OCCUPANCY, OR
CLOSED TO OIL AND GAS LEASING -
ALTERNATIVE D (Acres)**

	Standard & Special Raptor Stipulations	No Surface Occupancy	Closed
West Butte	4,584	0	2,592
Middle Butte	4,495	0	666
East Butte	5,580	0	3,492
Total	14,659	0	6,750

From Locatable Mineral Development

Alternative A: There would be no impact to oil and gas leasing from the continued exploration of this area for hardrock mineral deposits. However, a mining operation could impact oil and gas exploration and development in that both would not be allowed to occur at the same time on any particular piece of ground. Once one of the operations is completed the other could proceed. The likelihood that a conflict would occur is remote. Should it occur, the impact would be minor.

Alternative B: There would be no impact to oil and gas leasing and development.

Alternative C: The impacts would be the same as those discussed in Alternative A for existing leases and leases outside the ACEC. There would be no impact for leases within the ACEC.

Alternative D: The impacts would be the same as those in discussed in Alternative B.

IMPACTS TO SOILS AND VEGETATION

From Land Tenure Adjustment

Alternative A: A total of 137 acres of BLM land are available for disposal by sale or exchange. With disposal a change in surface management is not expected and impacts to soils and vegetation would remain the same as described in the next section (Off-Road Vehicle Use).

Alternatives B & C: These alternatives provide for no BLM land disposal in the study area; therefore, there would be no impacts to soils and vegetation.

Alternative D: The impacts would be the same as those discussed in Alternative A.

From Off-Road Vehicle Use

Alternative A: ORV use decreases or removes vegetation and lowers soil productivity by compacting surface and subsurface soil layers. ORV use usually results in the formation of paths and ruts resulting in accelerated erosion. The emergency road closure in the Sweet Grass Hills ACEC would continue to reduce the amount and severity of soil compaction and erosion. In the long term, a reduction of existing compaction, revegetation of paths, trails, and rutted areas would reduce the potential for soil erosion and increase the potential for vegetative cover.

BLM land outside the Sweet Grass Hills ACEC is open to ORV use (137 acres). Impacts could occur because of soil compaction and possible soil erosion but the likelihood is remote. Public access to the area is limited by surrounding private lands and ORV use is held to a minimum because of a local landowner and sportsmen agreement.

Alternative B: This alternative would close all BLM land in the study area to ORVs with no exceptions. This would reduce potential disturbance and impacts to soils and vegetation similar to those described under Alternative A.

Alternatives C & D: The impacts would be the same as those discussed in Alternative A.

From Oil & Gas Leasing and Development

Alternative A: Surface activities associated with oil and gas exploration and development activities could cause a loss of vegetation, soil compaction, and erosion. Impacts to soils and vegetation would occur to the extent of surface

disturbance to accommodate structures or work areas. There is also the potential for the introduction and/or spread of noxious weeds on these disturbed areas. Construction of a drill pad could disturb 1 to 2 acres and road construction generally disturbs 1 to 2 acres per mile (an average of 3 acres per well pad and road). The overall extent of the surface disturbed would be limited and required mitigation measures would tend to reduce the overall impacts. It is anticipated that 20 wells could be drilled on Federal minerals over a 10 to 15 year period within the study area resulting in 60 acres of surface disturbance. However, only 1 or 2 wells are anticipated to be located in the Sweet Grass Hills ACEC and all surface not needed for the production activities would be recontoured and reclaimed.

Alternative B: Under this alternative, a no leasing determination would be in effect. Surface disturbing activities connected with oil and gas activities would be reduced. Should activities occur prior to existing lease expiration, the impacts would be similar to those discussed in Alternative A but of significantly less magnitude since only two Federal wells might be drilled resulting in surface disturbance of six acres.

Alternatives C & D: Once the existing leases expire, there would be no impact to soils and vegetation on the oil and gas lease area designated for no surface occupancy (6,750 acres). Until expiration, current leases would be managed per their existing lease terms and stipulations and impacts would be the same as those described under Alternative A.

The remaining Federal minerals within the study area would be leased with standard stipulations (Appendix B, Attachment B.1). It is anticipated that 18 Federal wells could be drilled in the study area resulting in 54 acres of surface disturbance. The impacts from oil and gas activities would be the same as those discussed in Alternative A.

From Locatable Mineral Development

Alternative A: Exploration in the Sweet Grass Hills would impact soils and vegetation. In the short term, soil compaction can lead to accelerated erosion and sedimentation. This is generally proportional to the acreage disturbed. Reclamation of the disturbed areas could begin within an estimated ten years. Stabilization of soils on the disturbed areas could occur within an estimated 2 to 3 years after reclamation. The long term impacts would be negligible after reclamation. Revegetation of soils from previous exploration, given normal precipitation, has been moderately to highly successful.

Mining in the Sweet Grass Hills would impact soils and vegetation. The impact would occur on areas where vegetation is removed for constructing roads, mills, plants, pits,

pads, and ponds. The impacts would consist of erosion from these areas and increased sediment to receiving streams. Soil displacement and compaction would occur due to heavy equipment usage, especially in wet weather. Best management practices such as water bars on roads and sediment capture ponds would mitigate the impacts of erosion and sedimentation. It is anticipated that erosion and sedimentation would exhibit slight to moderate increases above current conditions. The total area of disturbance would be less than 100 acres for an open-pit mine using a cyanide heap leaching process. An underground mine would disturb less than 50 surface acres.

An infestation and spread of noxious weeds could occur from surface disturbing activities that occur on adjacent private land or public land.

Alternative B: This alternative withdraws the study area from locatable mineral entry and further mineral exploration and development would not occur. Full implementation of this alternative, including completion of all necessary acquisitions and easements, would avoid potential negative impacts to soils and vegetation.

Alternative C: The impacts would be similar to Alternative A, except the lands where direct impacts could occur would be limited to areas with Federal surface/private minerals (1,252 acres) and Federal minerals with valid claims (~100 acres).

Indirect impacts to soils and vegetation on BLM land could occur from exploration or development on private surface/private minerals. Locatable mineral development on private land could affect vegetative resources through the possible introduction and/or spread of noxious weeds.

Alternative D: The impacts would be the same as those discussed in Alternative B.

IMPACTS TO AIR QUALITY

From Land Tenure Adjustment and Off-Road Vehicle Use

Alternatives A, B, C, & D: There would be no impact to air quality.

From Oil & Gas Leasing and Development

Alternative A: Oil and gas activities affecting air quality are primarily short term and very localized. They include increased dust and particulate emissions associated with the construction of access roads and well pads. A slight increase in Carbon Dioxide, Carbon Monoxide, Nitrogen

Oxide, and particulates would result from drilling and workover operations. These would be negligible given the short duration (3 days) for these operations. State and Federal emission levels would not be exceeded. Flaring and venting of associated gas as a result of well maintenance and routine production operations would result in increased methane gas released to the atmosphere. These values normally range from less than 1 MCF to 10 MCF per day and are considered to have negligible impacts.

Alternative B: Until existing leases expire, impacts would be the same as those discussed in Alternative A but of less magnitude since only two of the reasonably foreseeable Federal wells might be drilled. After existing leases expire, there would be no impact to air quality.

Alternative C: The impacts would be the same as those discussed in Alternative A.

Alternative D: The impacts would be the same as those discussed in Alternative A, should exploration of valid existing leases occur. There would be no impacts to the ACEC if the existing leases expire. Impacts would be similar, but of a lesser degree, to those described in Alternative A outside the ACEC.

From Locatable Mineral Development

Alternative A: Exploration activities, such as road and trench construction, would release particulates (dust). Past exploration work created only slight to negligible air quality impacts during construction because the moisture content of the soil material suppressed dust generation. Of greater impact is the particulate release during drilling. Compressed air is used to circulate the drill cuttings in the upper portion of the exploration hole. The air returned from the hole contains ground rock fragments, part of which are released to the atmosphere. The dust created during drilling would be readily visible when near line-of-site to the drill rig. It would dissipate rapidly due to settlement and dispersion over a short distance. Once the drilling encounters water, typically at about 100 feet, dust generation is suppressed as water is used for circulating the cuttings.

Air quality impacts from mining activities would occur from the release of particulates during construction, operations (heavy equipment, material transport, vehicles), and reclamation. Fugitive dust emissions would increase. Dust emissions could be minimized by using dust control equipment or sprinkling system.

Alternative B: A withdrawal of Federal minerals from locatable mineral entry, including completing all necessary acquisitions and easements, would prevent any impacts to air quality.

Alternative C: Mining activity could occur on private minerals or on any valid claims. The impacts would be similar to those discussed in Alternative A, except they would be limited to areas with Federal surface/private minerals (1,252 acres) and Federal minerals with valid claims.

Alternative D: The impacts would be the same as those discussed in Alternative B.

IMPACTS TO WATERSHED

From Land Tenure Adjustment and Off-Road Vehicle Use

Alternatives A, B, C & D: There would be no impact to water resources.

From Oil and Gas Leasing and Development

Alternative A: All Federal minerals in the study area would be open to oil and gas leasing with standard stipulations (Appendix B, Attachment B.1) and best management practices (DSL, 1991) for the protection of water resources. The surface casing would be cemented to the surface through all fresh water zones. The other casing string(s) may or may not be cemented. A slight potential exists for fluids or gases to leak from the non-cemented portion of the casing string into shallow, fresh water aquifer systems. A leak would have the greatest potential of contaminating a shallow aquifer system if it occurs in the same drainage as the aquifer system. For instance, a leak could contaminate an alluvial aquifer with such contaminants as oil, grease, or dissolved solids if it occurs in the same drainage occupied as the alluvial aquifer. Most shallow aquifer systems in the Sweet Grass Hills area are controlled by surface topography. It is unlikely a leak in one drainage would impact a shallow aquifer in an adjacent drainage. From 1932 to 1993, 66 wells have been drilled within the study area and no known contamination of fresh water zones has occurred as a result of casing string leaks. This potential only exists for producing wells. Once plugged and abandoned all zones containing fluids, oil, or gas would be isolated from each other by cement plugs.

Drilling and production of oil and/or gas typically employ pits to store drilling fluids and produced waters. Drilling fluids within this area consist mainly of native muds, or water mixed with bentonite, small amounts of caustic soda or acids for pH control, barite, and possibly cottonseed hulls, walnut shells and ground up cellophane for fluid loss control. Produced waters typically contain sodium, chlorides, magnesium, calcium, bicarbonates, sulfates and trace amounts of oil and grease. The use of any hazardous

substances is not anticipated. Any use of such substances would require approval. Onshore Oil and Gas Order No. 1 requires applicants for a drilling permit to submit detailed construction plans for their drilling fluids disposal pit. Application of mitigation measures, such as requiring impervious pit liners and leak detection systems to reserve pit construction, greatly reduces the possibility of a release of the pit contents into groundwater or adjacent surface waters. Onshore Oil and Gas Order No. 7 governs disposal of produced water from oil and gas activities and protects ground water from contamination through similar requirements. Produced waters often are of sufficient quality for livestock consumption. However, produced waters are restricted by the Montana Water Quality Act from mixing with the waters of the State unless they are of equal or higher quality than the receiving waters.

Erosion and sedimentation could increase as a result of road and pad building activities associated with oil and gas development. Possibly 60 acres of surface disturbance may result if the foreseeable 20 wells were drilled on Federal minerals. Impacts to surface and subsurface waters are anticipated to be insignificant due to the application of the standard stipulations, best management practices, and reclamation requirements.

Alternative B: The producing oil and gas wells currently existing in the study area have not created any known significant impacts to hydrologic resources. Eliminating future oil and gas leasing in the study area could reduce potential erosion and sedimentation from exploration and production activities. The potential for impacts to ground water would be reduced as current leases expire and are not renewed. Any exploration or development activities could result in impacts similar to those described under Alternative A, but of less magnitude since only two Federal wells might be drilled resulting in surface disturbance of six acres.

Alternatives C & D: These alternatives require a no surface occupancy (NSO) restriction to Federal minerals on new leases in the Sweet Grass Hills ACEC and 262 acres adjacent to the ACEC. The NSO restriction also applies to an additional 160 acres of Federal minerals immediately upstream of the Sage Creek Water District well north of East Butte. Existing leases, if explored and/or developed, could cause impacts similar to those discussed in Alternative A. Once they expire, there would be no impact to water resources in these areas.

The remaining Federal minerals within the study area would be leased with standard stipulations (Appendix B, Attachment B.1). It is anticipated that 18 Federal wells could be drilled in the study area resulting in 54 acres of surface disturbance. The impacts from oil and gas activities would be the same as those discussed in Alternative A.

When necessary to protect municipal water sources, future Federal oil and gas wells drilled in the study area would be required to cement all casing strings to the surface, thus minimizing the potential of ground water contamination.

From Locatable Mineral Development

Alternative A: For purposes of analysis, locatable mineral extraction is grouped into three categories; exploration, development of an underground mine, and development of an open-pit heap leach mine. All three categories have the potential to contaminate surface and/or ground waters, the severity depending on the location of the activity and the agency stipulations applied. The pathway for contamination of surface and/or ground waters is generally assumed to be the result of a spill, leak, cross contamination of aquifers, seepage, or acid rock drainage (ARD). Exploration and mining activities have the potential to impact water quality of the shallow aquifer systems if that activity is located in the same drainage as the water source.

ARD occurs as a result of natural oxidation of sulfide minerals contained in rock which is exposed to air and water. For practical purposes, the principal ingredients in the ARD process are; reactive sulfide minerals, oxygen, and water. The oxidation reactions are often accelerated by biological activity. The chemical and biological reactions yield low pH water which has the potential to mobilize any heavy metals that may be contained in the rock. If water is available as a transport medium, the resultant drainage can contain products of the acid generation process, typically elevated metal levels and sulfate. This drainage could cause a detrimental impact on water quality in the receiving environment.

The geologic data that has been collected from the Sweet Grass Hills does not give an indication of ARD potential. If ARD is generated by mining activities, its migration may or may not be limited by the naturally occurring carbonate minerals present in surrounding lithologic units.

Exploration: This activity mainly consists of road building, trenching, and drilling. Impacts to surface waters would most likely be sedimentation produced by surface disturbance. Increases in erosion and sedimentation are anticipated until the roads, trenches, and drill pads are reclaimed. Implementation of best management practices and approval of storm water discharge permits would serve to reduce erosion and sediment transport while roads are open and being used. Reclamation requires backfilling of trenches, resloping, and revegetating roads. This mitigates residual impacts to minimal levels.

The BLM requires more strict drill hole plugging techniques than State policy (DSL, 1992) in areas where domes-

tic water uses may be impacted such as the Sweet Grass Hills. All drill holes would be plugged bottom to top with grout or a bentonite slurry. This requirement prevents cross contamination of aquifers and migration of surface water into aquifers encountered by the drill hole.

Underground Mine Development: The two major pathways for contaminants from this activity to enter surface or ground waters is from ARD produced within the mine adit and escape (spills, leaks) from the processing or metal recovery system.

For purposes of this analysis, it is assumed that the ore removed from an underground operation would be processed by a vat leach technique located close to the mine adit. The Montana Water Quality Act, the Federal Safe Drinking Water Act, and the Clean Water Act plus various other State and Federal laws all serve to protect the existing, pre-mine water quality. However, past history of this type of ore processing in Montana suggests it is reasonable to assume a release of contaminants to surface and/or ground waters could occur sometime during the mine's life, either through a spill, leak, or ARD. Required monitoring should detect this movement of contaminants before it impacts down gradient users. Emergency cleanup operations should contain the contaminants within or near a mine permit boundary. However, if the release is large or monitoring fails to detect the release, contaminants could reach down gradient users. These water sources could be degraded to a point which violates drinking water standards and a replacement water source would be required.

Open-Pit Heap Leach Mine Development: The most reasonable scenario to envision, should this activity take place, is a valley fill heap leach (hereafter called the "pad") located in the upper reaches of Tootsie Creek on East Butte. Ore would be mined from an open pit near the pad with the waste rock stored in a dump. A processing plant to recover the precious metals would be placed near the pad. The pad, plant, dump, and pit could all be located in the upper reaches of Tootsie Creek.

The surface geology of upper Tootsie Creek consists of Syenite Porphyry (the igneous intrusive), Madison Limestone, limestones and shales of the Rierdon Formation, sandstones, limestones, and shales of the Sawtooth Formation (Lopez, 1993). Due to the steep topography, the pad, dump, and plant would most likely be placed on the Madison, Rierdon, or Sawtooth Formations. The sandstones and limestones of these formations are relatively porous and surface water rapidly infiltrates where Tootsie Creek crosses their outcrops. Little data exists on the hydrogeology of the Sweet Grass Hills, but it is reasonable to assume that the upper portions of creeks on the east side of East Butte supply water to the numerous seeps and springs located on

the northeast, east, and southeast flanks of East Butte. Therefore, any releases of contaminants from mining operations would migrate down gradient toward these seeps and springs, several of which serve as sources of domestic water for area residents.

Recent history of heap leach operations in Montana, and other Western states, suggest that despite all safety precautions taken, a release of contaminants to surface and/or ground waters could occur sometime during the life of the mine. A release would most likely occur in Tootsie Creek and would be associated with either ARD or a leak/spill of processing fluids. ARD could result from water and oxygen infiltrating through pit walls or floors, or through pads, dumps or dikes. Monitoring of down gradient aquifers and surface waters would trigger pump back operations and may prevent contaminants from reaching water users near the base of East Butte. If small or moderate amounts of contaminants migrate down gradient, unimpacted waters may dilute the concentration to levels that are undetectable or do not impact beneficial uses. A large release or inadequate monitoring could result in significant degradation of down gradient water sources requiring abandonment or expensive clean up operations.

A pit and pad in upper Tootsie Creek would alter the natural flow characteristics of the creek. Impacts would occur to flow, channel morphology, riparian vegetation, aquatic life, water quality, and recharge to down gradient wells, seeps, and springs. The degree of the impacts is impossible to predict but is dependant upon the location and construction methods used in the pad and pit.

After cessation of mining activities the pad and dump would be capped to prevent infiltration of precipitation and other surface waters. The pit would be reclaimed by reducing highwalls and planting trees, shrubs, grasses and forbs. These mitigating measures would reduce migration of contaminants off the mine site in the short term. However, in the long term, infiltration through the pit and erosion or slumping of the pad and dump could initiate ARD or a release of any residual contaminants, causing a significant degradation to down gradient surface and/or ground waters.

Alternative B: Hardrock mining is not currently occurring on BLM land in the study area. Withdrawing the Federal mineral estate from locatable mineral entry, including completing all necessary acquisitions and easements, ensures water resources would not be impacted by hardrock exploration and mining related activities.

Alternative C: Impacts to water resources from exploration, underground mine development, or open-pit heap leach development could also occur under this alternative. However, the surface lands where impacts could originate

would be limited to areas with Federal surface/private minerals (1,252 acres) and Federal minerals where claims are determined to be valid (~100 acres). These impacts would be similar to those discussed in Alternative A and would most likely occur in the locale of the head of Tootsie Creek since exploration and mining activities have the potential to impact water quality of the shallow aquifer systems if that activity is located in the same drainage as the water source. Any of these activities occurring on valid claims or private lands adjacent to the ACEC could result in indirect down gradient impacts.

Alternative D: The impacts would be the same as those discussed in Alternative B.

IMPACTS TO WILDLIFE

From Land Tenure Adjustment

Alternative A: The current management direction for land tenure adjustment proposes to consolidate public holdings in areas containing high value wildlife resources. Therefore, any land acquisitions should benefit wildlife resources of the Sweet Grass Hills through the special management afforded from the ACEC designation.

Alternatives B & C: Acquired lands would be added to the ACEC and, therefore, potential impacts from mineral development on acquired lands would be reduced.

Alternative D: The impacts would be the same as those discussed in Alternative A.

From Off-Road Vehicle Use

Alternative A: The emergency road closure (ERC) has been a program for both the wildlife resource and the recreationist, as it has allowed for deer and elk harvest to occur as most lands have been left open for walk-in hunting. If the ERC was dropped through activity planning, the Sweet Grass Hills ACEC would be open to ORV's, but as long as the surrounding landowners have closed their lands to such activity there would be little impact to wildlife on public lands. If the area was open to ORV's, impacts could occur through wildlife harassment and disturbance from human presence and vehicular noise. Habitat destruction would be minimal.

Alternatives B, C & D: Closing of public lands to ORV's would continue an ERC that eliminates vehicular harassment of wildlife while allowing most of the Sweet Grass Hills to remain open to walk-in hunting.

From Oil & Gas Leasing and Development

Alternative A: Oil and gas exploration and development would result in wildlife displacement and habitat loss due to road construction and placement of facilities. It is anticipated that 20 wells could be drilled on Federal minerals in the study area resulting in 60 acres of surface disturbance. In most cases these impacts would be minor and short term to wildlife depending on where they are located and in what types of habitat areas. Discovery leading to field development would result in similar impacts for a longer term. Application of standard lease stipulations (Appendix B, Attachment B.1) would prevent impacts during seasons which are critical in the life cycles of big game, game birds, and raptors. In addition, special raptor stipulations (Appendix B, Attachment B.2) would, likewise, prevent disturbance during the breeding season through fledging period. Impacts to small mammals and birds can be more severe as they have smaller habitat spaces, man tends to pay less attention to their special needs, and they often cannot displace to unoccupied habitats. They can be lost to road, pad, facility, and pipeline construction. Upon successful reclamation, small mammals and birds would again occupy the newly created habitats.

Alternative B: Some disturbance to wildlife and wildlife habitats could occur before existing oil and gas leases are phased out on 13,156 acres. As discussed under Alternative A, these disturbances are mitigated by applying the standard stipulations and raptor stipulations that are attached to leases. After the existing leases expire there would be no impact to wildlife. Leases held by production would continue for as long as those fields would last, therefore, impacts would be for longer periods in these areas.

Alternatives C & D: Applying NSO restrictions to the Sweet Grass Hills ACEC, and adjacent lands (422 acres) would eliminate any disturbances from exploration and development occurring in the most central and highest portions of the three Buttes. This would eliminate the possibility of impacts to wildlife populations that find these habitats important. Activities occurring on existing leases would cause impacts similar to those discussed in Alternative A.

In the remainder of the study area the impacts and mitigation would be similar to those discussed in Alternative A.

From Locatable Mineral Development

Alternative A: Exploration, as conducted in the East Butte area and as described in the hardrock RFD (Appendix A), could impact local wildlife populations for the duration of the activity since wildlife would avoid the area of disturbance due to habitat loss, mechanical noise, and human

presence. Impacts could be short term if reclamation is quickly pursued and successful. Timing windows of avoidance during critical periods for deer and elk can be applied for winter range, fawning, and calving areas which would eliminate the most significant impact. At other times, big game may be temporarily displaced, which could cause other problems such as improper harvest or crop damage on private lands.

Impacts from mine development, either underground or open pit as described in Appendix A, would be much more significant to the area's wildlife resources than exploration. Hardrock mining would occur year round and critical periods for wildlife could not be avoided. Impacts to wildlife would include habitat loss, human and mechanical harassment, and animal loss. Blasting, moving ore with machinery, and general mine activities disrupt normal activities of wildlife. Small animals would not avoid the effects of mining, and if they cannot be displaced from the 50 to 100 acres disturbed to adjacent unoccupied habitat they would be subject to injury and death. Larger species could adapt to mining activities, but mining would disturb wildlife during critical time periods. Large acreages, even the entire Tootsie Creek drainage could be influenced, resulting in total avoidance of those habitats for the life of the mine. Impacts could occur for ten years and for the most part could not be mitigated for that entire period. An open-pit mine would have the greatest impact as it would disturb the largest area. The pit would probably not be backfilled and, therefore, probably never reclaimed to its former habitat value. Areas occupied by other facilities could be reclaimed to pre-mine values.

Alternative B: Withdrawing all Federal minerals from locatable mineral entry, including acquired lands, would eliminate potential negative impacts from hardrock exploration and mining.

Alternative C: Impacts to wildlife from exploration and mine development of valid claims and private minerals adjacent to the ACEC in the Tootsie Creek area of East Butte could occur under this alternative. These impacts would be similar to those discussed in Alternative A. However, the lands where direct impacts could occur would be limited to areas with Federal surface/private minerals (1,252 acres) and Federal minerals where claims are determined to be valid (~100 acres). Other direct impacts to individual animals and habitats could occur on lands of private surface ownership. Indirect impacts could occur on Federal surface from development on private minerals. The result is that the overall impacts could be of the same magnitude as Alternative A as wildlife's use of the area does not recognize land ownership boundaries.

Alternative D: The impacts would be the same as those discussed in Alternative B.

IMPACTS TO RECREATION

From Land Tenure Adjustment

Alternatives A, B, C & D: Acquisition of land could result in more public land for recreational activities. Access to the Sweet Grass Hills ACEC could be improved through acquisition.

From Off-Road Vehicle Use

Alternative A: The ORV closure would remain in effect unless an activity plan would open some roads or trails in the Sweet Grass Hills ACEC. This closure reduces the opportunities for motorized recreational use in the study area. The ORV use in the small open area (137 acres) is insignificant.

Alternative B: There would be a negative impact to recreational ORV users with a closure of public lands in the study area. This closure reduces the opportunities for motorized recreational use in the study area but improves the opportunities for hikers and walk-in hunters.

Alternatives C & D: The impacts would be the same as those discussed in Alternative A.

From Oil & Gas Leasing and Development

Alternative A: Some slight short term inconvenience to hikers and hunters may be experienced when exploratory drilling or field development activity is occurring. This level of activity could discourage or curtail dispersed recreation use.

Alternative B: When existing oil and gas leases expire and are not reoffered there would be no impact to recreation. Activities occurring on existing leases prior to expiration would have the same impacts as those described under Alternative A, but of less magnitude since only two Federal wells might be drilled.

Alternatives C & D: There would be no impact to recreation with a NSO restriction. Impacts similar to those discussed in Alternative A could occur as a result of exploration or development activities on valid existing leases.

From Locatable Mineral Development

Alternative A: There would be short term impacts from exploration and long term impacts with development of a mine. Exploration and mining activities would reduce the opportunities for hiking and hunting. These activities would cause increased traffic, noise, and road building. Mining

could discourage or curtail dispersed recreation use and displace some use to other areas.

Alternative B: A withdrawal of Federal minerals from locatable mineral entry, including completing all necessary acquisitions and easements, would prevent any negative impacts to recreation.

Alternative C: Mining activity could occur on private minerals or on any valid claims. The impacts would be similar to those discussed in Alternative A, except they would be limited to areas with Federal surface/private minerals (1,252 acres) and Federal minerals where claims are determined to be valid (~100 acres).

Alternative D: The impacts would be the same as those discussed in Alternative B.

IMPACTS TO LANDS

From Land Tenure Adjustment

Alternative A: A total of 137 acres of BLM land would be available for disposal, with emphasis on exchange (Table 4.9). These lands meet FLPMA Section 203(a)(1) sale criteria.

TABLE 4.9

BLM LAND AVAILABLE FOR DISPOSAL (Acres)

T. 36 N., R. 3 E., PMM., Toole County	
sec. 9, NE1/4SW1/4;	40
sec. 18, Lots 5, 6, 11, and 12, and NW1/4SE1/4:	97
Total	137

Alternatives B and C: The management objective is to concentrate acquisition in areas with Federal subsurface and adjacent to the Sweet Grass Hills ACEC. The study area contains 13,286 acres of private surface with all Federal minerals and 1,644 acres of private surface with Federal oil and gas. The study area also contains 1,252 acres of Federal surface with private minerals.

Alternative D: The impacts would be the same as those discussed in Alternative A.

From Off-Road Vehicle Use

Alternative A: No permits or other authorizations would be issued for organized ORV events unless an activity plan would open some roads or trails.

Alternatives B, C & D: No permits or other authorization would be issued for organized ORV events.

From Oil & Gas Leasing and Development

Alternative A: Right-of-ways for roads, pipelines, and power lines would be issued as needed to insure that the lease holder could develop the lease.

Alternative B: After existing oil and gas leases expire, the area would not be leased and no right-of-ways would be issued for pipeline gathering systems, pipeline transportation systems, power lines, or vehicle access. Exploration and development of existing leases prior to expiration may require the issuance of right-of-ways.

Alternatives C & D: After existing oil and gas leases expire within the Sweet Grass Hills ACEC, and 422 acres adjacent to the ACEC, the area would be leased with a NSO stipulation and no right-of-ways would be issued for pipeline gathering systems, pipeline transportation systems, power lines, or vehicle access. Impacts for existing leases would be the same as Alternative A.

From Locatable Mineral Development

Alternative A: Right-of-ways for roads, pipelines, and power lines would be issued as needed to insure that the mining claim holder could develop the mineral potential. Additional lands would be available for mill site claims.

Alternative B: No right-of-ways across BLM land would be issued for the purpose of developing the Federal mineral estate.

A withdrawal of 19,765 acres of Federal minerals would be required to close the lands to locatable mineral entry. Acquired minerals would also be closed to mineral entry.

Alternative C: Right-of-ways across BLM land would be issued for the purpose of developing the private mineral estate or to any claims determined to be valid.

Alternative D: The impacts would be the same as those discussed in Alternative B.

IMPACTS TO CULTURAL RESOURCES

From Land Tenure Adjustment

Alternative A: There are no known cultural sites or traditional Native American spiritual practices specifically associated with the lands identified for disposal. However, these lands may be within a yet to be defined Sweet Grass Hills Historic District. If these lands are determined to be

within a historic district, it may still be possible to reduce the effect of disposal through protective covenants in the deed, depending on the buyer's planned use of the land. Disposal would be discretionary pending completion of compliance with the 36 CFR 800 regulations and the American Indian Religious Freedom Act.

Acquisition of high value lands adjacent to the Sweet Grass Hills ACEC would provide more protection of traditional Native American spiritual practices and cultural sites.

Alternative B: As there would be no BLM land disposal in the study area under Alternative B, there would be no impacts to cultural resources.

The impacts from acquisition would be the same as those discussed in Alternative A.

Alternative C: Since all Federal lands would be retained, there would be no potential adverse impacts from land disposal. Possible acquisition of lands and mineral estate in the Devil's Chimney Cave vicinity would positively benefit efforts to protect this culturally and historically important area.

Alternative D: The impacts would be the same as those discussed in Alternative A.

From Off-Road Vehicle Use

Alternative A: An activity plan to guide ORV use would help preserve of traditional Native American spiritual practices and cultural sites. As some ORV use would be permitted, there might be some negative impacts such as audio and visual intrusion to those participating in traditional Native American spiritual practices or a disturbance to cultural sites. Although minimal, some impact (disturbance) to cultural and historical sites could occur under this alternative as a result of opening some areas to ORV use through an activity plan.

Alternative B: Closing the study area to off-road vehicles would have a positive effect on cultural resources by eliminating potential impacts such as audio and visual intrusion to those participating in traditional Native American spiritual practices and by preventing disturbance to cultural sites.

Alternative C: The impacts would be similar to those discussed in Alternative B, except 137 acres on Middle Butte would be open to ORV use. As some ORV use could occur in this area, there might be some negative impacts such as audio and visual intrusion to those participating in traditional Native American spiritual practices or a disturbance to cultural sites.

Alternative D: The impacts would be the same as those discussed in Alternative A.

From Oil & Gas Leasing and Development

Alternative A: Oil and gas exploration and development has the potential to negatively impact traditional Native American spiritual practices and cultural sites. The reasonably foreseeable oil and gas activities could result in short term mechanical noise and long term visual intrusions that would disturb those participating in traditional Native American spiritual practices. These activities could also disturb and/or destroy cultural sites. The degree to which these impacts could be mitigated through protective stipulations would depend on the location, size, and intensity of development. It is reasonably foreseeable that 20 wells could be drilled on Federal minerals in the study area resulting in 60 acres of surface disturbance (Appendix B).

Impacts to historic properties which might result from oil and gas development could probably be mitigated to some degree in most cases. Individual cultural features (vision structures or cairns) would be avoided and not physically impacted by these wells using standard stipulations. An oil or gas well can be moved up to 200 meters to minimize impacts under standard lease terms. However, oil or gas wells in the study area would probably result in adverse impacts to the historic district. Additionally, the wells would be considered an unacceptable intrusion into a sacred area by traditional Native Americans since the entire area is considered culturally important to some people. Standard stipulations would be applied for wellsites on federal minerals and private surface, but no stipulations could be applied by BLM for private minerals. Adverse impacts from oil and gas development on private minerals could therefore occur from this alternative.

Alternative B: Until existing leases expire, impacts would be the same as those discussed in Alternative A, but of less magnitude since only two Federal wells might be drilled resulting in surface disturbance of six acres. After existing leases have expired, there would be no potential impacts to cultural sites or traditional Native American spiritual practices from oil or gas development on Federal minerals. There could be impacts to cultural resources from development on adjacent private minerals.

Alternative C: The NSO stipulation on new leases would protect cultural sites and traditional Native American spiritual practices from development of Federal oil and gas within the ACEC and land acquisitions adjacent to the ACEC. However, until existing leases expire, the impacts would be the same as those discussed in Alternative A.

There could still be impacts associated with oil and gas development on split estate within the study area, but not adjacent to the ACEC. These impacts would be the same as those described in Alternative A.

Alternative D: Oil and gas leases would only be issued if non-federal development was draining federal oil and gas. Impacts would be most similar to Alternative B, however unlike Alternative B there would still be a slight potential for adverse impacts to the historic district since the area could be leased under some circumstances.

From Locatable Mineral Development

Alternative A: It is reasonably foreseeable that exploration and development of locatable minerals could occur within the Tootsie Creek drainage of East Butte. These activities could negatively impact Devil's Chimney Cave, and traditional Native American "paint" collecting areas as well as traditional practices associated with Tootsie Creek. It could also adversely affect the Sweet Grass Hills historic district.

Exploration and development activities result in mechanical noise and visual intrusions that would disturb those participating in traditional Native American spiritual practices. These activities could also disturb and/or destroy cultural sites. Although individual cultural features could probably be avoided, the entire area is considered culturally important to some people making complete avoidance impossible.

The degree to which these impacts could be mitigated through protective stipulations would be dependent on the location, size, and intensity of development as well as whether or not a BLM permit was required for the activity. However, during consultation for mineral exploration on East Butte, Native American representatives from various groups plainly stated that "no mitigation" was possible for this sacred area (BLM, 1993a). An underground or open-pit mine of 50 to 100 acres of surface disturbance in Tootsie Creek (Appendix A) would, therefore, likely result in unmitigatable impacts to traditional Native American spiritual practices as well as an adverse effect to a historic district eligible for the National Register of Historic Places. A mining operation within Tootsie Creek basin could result in the permanent loss of the traditional Native American spiritual practices associated with this area. Further, since this area contains the traditional paints necessary for the Sun Dance, the impact of a mine in Tootsie Creek could extend to traditional spiritual practices which are conducted outside of the Sweet Grass Hills.

Alternative B: A withdrawal of Federal minerals from locatable mineral entry, including completing all necessary

acquisitions and easements, would greatly reduce potential negative impacts to cultural sites or traditional Native American spiritual practices from hardrock exploration or development where a federal permit is required. However, since 48,840 acres of the 68,605 acre study area are private or state owned minerals, some negative impacts could still occur through development of non-federal minerals. This alternative offers the greatest protection for the preservation of cultural and historical values associated with the Sweet Grass Hills.

Alternative C: Impacts would be similar to Alternative B, assuming that there are acquisitions from willing sellers. However, mineral exploration and development could still occur on private minerals or valid claims on federal minerals. Even so, it is unlikely that a mine would be developed under this alternative since the withdrawal further limits an area that only had moderate development potential before the withdrawal. Consequently, it is unlikely that there would be impacts from locatable mineral development with this alternative.

Alternative D: The impacts would be similar to Alternative B, since condemnation would preclude mineral development in Tootsie Creek. However, areas away from the ACEC could be impacted to a greater extent than with than with Alternative B, since only 6,328 of the 19,765 acres of federal mineral estate would be withdrawn. Exploration of federal minerals and its related impacts are more likely to occur outside of the ACEC under this Alternative than Alternative B or C, since there would be more area of federal minerals available. However, this Alternative is only second to Alternative B in protection of the Tootsie Creek Basin because condemnation would be used to protect this area.

No impacts would be expected to occur in Tootsie Creek Basin but impacts could occur outside of the ACEC but inside of the study area under this Alternative.

IMPACTS TO SOCIAL CONDITIONS

The social impacts from the alternatives would be changes to social well-being except for the potential impacts from locatable mineral development. BLM resource decisions could affect social well-being in a variety of ways. These include changes in the amount and quality of resources such as recreational opportunities, and resolution of problems related to resource use, such as access problems. BLM's decisions could affect employment in an area, which could in turn affect the standard of living and, therefore, social well-being. Beliefs that could affect social well-being include individuals having a sense of control over the decisions that affect their future, and feeling that the gov-

ernment strives to act in ways that benefit everyone equitably, rather than benefitting just a privileged few.

From Land Tenure Adjustment

Alternatives A, B, C & D: More land available for recreation and improved access to public land could have a positive effect on the social well being of recreationists. There could be minor negative effects to county residents if losses in payment in lieu of taxes (PILT) are not offset by other payments. See the section on Economic Impacts from land tenure adjustment for this alternative.

From Off-Road Vehicle Use

Alternative A: Loss of areas open to ORV use could have a negative effect on the social well-being of motorized recreational users through the loss of recreational opportunities.

Alternative B: Closure of the study area with no exceptions would cause inconvenience to permittees, lessees, and right-of-way holders. The social well-being of motorized recreationists could diminish with the closure of this area.

Alternatives C & D: The impacts would be the same as those discussed in Alternative A.

From Oil & Gas Leasing and Development

Alternative A: Generally, social well-being would improve for the individuals who receive direct and indirect employment or income from oil and gas leasing and development. See the Impacts to Economic Conditions from oil and gas leasing and development for this alternative.

Alternative B: Until the existing leases expire, the impacts would be the same as those described under Alternative A. After that, there would be a potential loss of employment and income from oil and gas activity.

Alternatives C & D: The impacts would be the same as those discussed in Alternative A.

From Locatable Mineral Development

Alternative A: Mining exploration and development could effect population, infrastructure, social organization, and social well-being. If population increases were to occur due to people in-migrating for employment, impacts to housing, schools, and other public services could occur. Hardrock mining development could also provide some additional local employment and could reverse historic out migration trends. The numbers and types of local businesses could also increase, enhancing the social well-being of residents. Effects to social organization could be experienced if

newcomers to the area were different in attitudes and values from existing residents. Specific impacts would depend upon many factors including the current community service and infrastructure capacity, the timing of development and the number and type of nonlocal employees hired.

The social well-being of recreationists (dispersed use or hiking, sightseeing, hunting, etc.) could diminish if recreation quality and opportunities decrease due to the development of a mine in the area.

Alternative B: Individuals and groups concerned about the negative effects of mineral exploration and development would feel the government is being responsive and their concerns were addressed. They would feel that they had some control over what happened in the Sweet Grass Hills, especially if important lands adjacent to the ACEC were acquired. Ongoing population out-migration trends would probably continue in the area.

Alternative C: Since mining activity could occur on adjacent private minerals or on any valid claims, the impacts would be similar to those discussed in Alternative A.

Alternative D: The impacts would be the same as those discussed in Alternative B.

IMPACTS TO ECONOMIC CONDITIONS

From Land Tenure Adjustment

Alternative A: A total of 137 acres of BLM land in the study area could be disposed of by sale or exchange. Lands identified for acquisition would be adjacent to the Sweet Grass Hills ACEC and would tend to block up BLM-administered lands making it easier to manage. The economic consequences of changes in the land ownership pattern vary with the type of adjustment (sale or exchange), the length of time over which adjustments are made, and the magnitude of such adjustments.

The holder of a grazing lease and/or the adjacent landowner on a tract identified by the BLM for disposal could be offered the opportunity to acquire it through exchange or sale. The ability of the lessee or adjacent landowner to participate can vary widely and there is a potential for minor impacts to some ranch operations through the loss of the leased area should it be offered to and acquired by another entity.

County governments would experience some effect on PILT if BLM land in their counties are exchanged for lands in another county. The net fiscal effects on local governments would depend on the type of land adjustment (sale or

exchange) and whether the land adjustment is with private landowners or state and local governments. Fiscal effects would also depend upon whether exchanges are largely within or between counties and how the property taxes on lands passing into private ownership compare with the level of PILT. Tax exempt lands acquired from state or local governments through exchanges would be excluded from PILT. However, this loss of revenue to the counties could be partially offset by lands acquired by the State which might be subject to State Equalization Payments.

Alternatives B & C: Since all Federal lands would be retained, there would be no impact from land disposal. The impacts from acquisition would be the same as those discussed in Alternative A.

Alternative D: The impacts would be the same as those discussed in Alternative A.

From Off-Road Vehicle Use

Alternative A: ORV use is primarily associated with hunting, ranching, BLM administration, and oil and gas activities. These users generally use existing roads and trails. The area is not a high-use area and ORV disturbances are infrequent. Restrictions on ORV use in specified areas would enhance non-motorized recreation activities at the expense of motorized activities. Designating lands in the Sweet Grass Hills ACEC closed to off-road vehicles could increase costs to lessees of public lands such as ranchers and oil and gas operators, because of the need for a permit on a case-by-case basis for motorized access or the need for non-motorized access to the area. Economic impacts would be minor because of low ORV use.

Alternative B: The impacts would be similar to those discussed in Alternative A, except with no exceptions for motorized access, costs would increase for lessees of public lands such as ranchers.

Alternatives C & D: The impacts would be the same as those discussed in Alternative A.

From Oil & Gas Leasing and Development

Alternative A: The area would remain open to oil and gas leasing and related exploration and development activities. The highest level of activity projected in the oil and gas RFD forecasts that 60 wells could be drilled in the study area (20 wells on Federal minerals and 40 wells on private/state minerals) in a three year period corresponding to high oil and gas prices and a new discovery. The economic impacts were estimated on an annual basis. Twenty wells could be drilled annually of which four could be producing wells. The economic benefits include the costs of drilling,

completing, and abandoning the wells and the value of the oil and gas produced. The estimated increase in total economic activity could be \$1.9 million. Household earnings could increase by an estimated \$290,000, or less than .3 percent of 1990 nonfarm income in the two county area. The total number of jobs, direct and indirect, supported by this level of activity could be 14.

The Federal rents and royalties could total approximately \$36,000 annually.

Alternative B: The no leasing alternative could result in the loss of approximately 18 Federal wells or 30 percent of the total foreseeable oil and gas activity in the study area. A proportional number of dry holes and producing wells could be foregone. The economic activity, household income, and employment could be 30 percent less than the total projected under Alternative A.

There could be a disproportionate loss of Federal receipts. All of the potential rental income, \$32,000 annually, could be foregone under a no lease alternative.

Alternatives C & D: An NSO stipulation could result in the loss of 1 or 2 wells. The analysis assumes they are all dry holes. The economic activity, household income, and employment could be 2 to 4 percent less than projected under Alternative A.

The Federal rents and royalties could total approximately \$36,000 annually.

From Locatable Mineral Development

Alternative A: There are 20 mining claims remaining in the Sweet Grass Hills study area. Fourteen claims remain on East Butte and six on Middle Butte. The BLM conducted a validity exam of existing claims in the East Butte area (14 claims). The results indicate eight of the claims meet the test of discovery under the mining law and are valid (Figure 2). The RFD for hardrock minerals (Appendix A) includes the exploration of the remaining claims and the potential for the development of a hypothetical mine on East Butte.

Exploration and small scale mining has occurred in the past. A typical exploration project would cost \$200,000. Exploration activity could increase total economic activity by \$340,000 in the two county area. Most of the expenditures would be in the construction and services sectors. The level of exploration activity projected would not represent a significant increase in regional economic activity. The exploration activity could support up to nine jobs annually, consisting of up to five individuals during the field season and up to four jobs supported by spending activity. This would not be a significant increase in employment at the regional or county level.

New mining operations would have an impact on the area's employment, population, economic activity, and tax revenues, during both the construction and production phases. The impacts may be long-term (mine life - 10 years), depending on the size of the operation, and the ability to maintain operations and expand. The timing, size, and location would determine the magnitude of the impacts to the area's economy. These factors, as well as the inherent uncertainty of future economic conditions, make it speculative, at best, to estimate when the operations projected might be developed. Accordingly, it would be impossible to assess specific impacts with any degree of accuracy. However, a possible scenario for mineral development is presented here to illustrate the potential magnitude of impacts. Appendix A describes two hypothetical operations that could reasonably be expected to occur in the study area, one is a small surface mine with a heap leach operation and the other is an underground mine. The operations have different capital investments, reserves, operation costs, and employment levels, therefore the annual impacts on economic activity and taxes are different.

Either of the mining operations is projected to be built in the Tootsie Creek drainage. The mines could increase employment in the mining sector by 25 or 55 jobs in the foreseeable future, depending on the type of operation. If all new jobs were filled by non-local labor, the population could increase by 50 to 120 people as new workers and their families move into the area, an increase of 1 to 1.5 percent over the 1990 population of 7,341 for Liberty and Toole Counties. It is likely, however, that for the foreseeable future the local labor pool would continue to fill a significant portion of new jobs created if mining were to occur in the Sweet Grass Hills. The total projected employment, including direct and indirect employment, could be 60 to 74 jobs depending on the type of operation, less than 1.7 percent of the 1990 employment.

There could be an increase in economic activity in the two county area and an increase in tax revenues in Liberty County if either of the mining operations occurred. The impacts to economic activity would result from the construction and operation of the mine as well as indirect impacts from secondary spending activity. The average annual gross revenues from each operation are estimated at \$2.9 million for an open-pit mine and \$3.8 million for an underground mine. The total increase in economic activity in the two county area could be \$4.9 million and \$6.1 million, respectively. Household earnings could increase \$1.3 million and \$1.7 million, respectively, less than 1.5 percent of the 1990 nonfarm income for the two county area.

The taxable valuation of Liberty County would increase due to the construction of mining facilities. Compared to the

1990 values, an open-pit mine could increase taxable values an estimated 3.5 percent and increase property tax revenue 4 percent. The corresponding estimate for an underground mine is a 1.9 percent increase in value and a 2 percent increase in tax revenue. Other state tax revenues generated during the production phase would come from the Gross Proceeds Tax, Metal Mines License Tax, and the Resource Indemnity Trust Tax.

The exploration activity and development of a mine could provide employment opportunities and temporarily stall the long-term decline in population in the two county area.

Alternative B: The economic impact resulting from exploration and mine development discussed in Alternative A would not occur.

To acquire any of the claims determined to be valid, a process of evaluating the mineral deposit to estimate the probable costs of mining and returns gained through sale of the commodity would be completed and, following that, a determination would be made regarding the fair market value of the deposit. The fair market value represents the cost BLM would incur to prevent development of the deposit.

Without the completion of the above analysis, it is difficult to estimate the cost of acquiring any valid claims.

Alternative C: Since mining activity similar to that described in the RFD could occur on adjacent private minerals or on the eight claims that are determined to be valid, the impacts would be similar to those discussed in Alternative A, except the likelihood of that activity is diminished.

Alternative D: The impacts would be the same as those discussed in Alternative B.

UNAVOIDABLE ADVERSE IMPACTS

This section summarizes the adverse impacts that would remain if the alternatives are implemented and the mitigating measures developed by the BLM are applied. Only those environmental elements with adverse impacts are discussed.

Alternative A

Locatable Minerals and Oil and Gas: There would be no unavoidable adverse impacts.

Soils and Vegetation: Oil and gas and hardrock mining activities could adversely effect natural soils and associated plant diversity. Twenty exploratory oil and gas wells could result in 60 acres of surface disturbance. There could be a loss and displacement of soils and vegetation on approximately 50 acres with an underground mine to 100 acres from an open-pit mine.

Watershed: Current laws, regulations, and mitigation serve to protect the existing water quality in the Sweet Grass Hills. However, water quality could be adversely affected if hardrock mining results in a large release of contaminants to surface and/or ground waters through a spill, leak, or ARD.

Wildlife: An open-pit mine would probably not be back-filled and, therefore, could not be reclaimed to its former habitat value. This would be an unavoidable adverse impact to less than 100 acres of wildlife habitat.

Cultural: Oil and gas and hardrock mining activities could result in an unavoidable adverse impact to historic properties and traditional Native American spiritual practices.

Alternative B

Locatable Minerals: This alternative would preclude foreseeable hardrock exploration and mining in the Sweet Grass Hills. This would have an unavoidable adverse impact on locatable minerals through the loss of development opportunities and the knowledge about the resource.

Oil and Gas: This alternative could preclude foreseeable oil and gas activity on Federal minerals in the study area. Only one or two of the 20 wells anticipated to be drilled on Federal minerals would be drilled.

Soils and Vegetation, Watershed, Wildlife, and Cultural: There would be no unavoidable adverse impacts.

Alternative C

Locatable Minerals: This alternative would minimize foreseeable hardrock exploration and mining in the Sweet Grass Hills. Approximately 50 percent of this area is rated a high occurrence potential for precious metal resources. This would have an unavoidable adverse impact on locatable minerals through the loss of development opportunities and the knowledge about the resource. However, because of the finding of discovery on 8 of the existing 14 claims on East Butte, exploration and possibly mining could occur. Exploration would improve the mineral resource information which is currently minimal, to eventually determine if economic mining could occur.

Oil and Gas: This alternative could preclude drilling 1 or 2 wells on Federal minerals because of the no surface occupancy restriction in the Sweet Grass Hills ACEC.

Soils and Vegetation: Oil and gas drilling and hardrock exploration and mining activities could adversely effect natural soils and associated plant diversity. Eighteen exploratory oil and gas wells could result in 54 acres of surface disturbance. There could be a loss and displacement of soils and vegetation on approximately 50 acres with an underground mine to 100 acres from an open-pit mine.

Watershed: Current laws, regulations, and mitigation serve to protect the existing water quality in the Sweet Grass Hills. However, water quality could be adversely affected if hardrock mining results in a large release of contaminants to surface and/or ground waters through a spill, leak, or ARD.

Wildlife: An open-pit mine would probably not be back-filled and, therefore, could not be reclaimed to its former habitat value. This would be an adverse impact to less than 100 acres of wildlife habitat.

Cultural: Oil and gas and hardrock mining activities could result in an unavoidable adverse impact to historic properties and traditional Native American spiritual practices.

Alternative D

Locatable Minerals: This alternative would preclude foreseeable hardrock exploration and mining in the Sweet Grass Hills ACEC. This area is rated a high occurrence potential for precious metal resources. This would have an unavoidable adverse impact on locatable minerals through the loss of development opportunities and the knowledge about the resource.

Oil and Gas: This alternative could preclude drilling 1 or 2 wells on Federal minerals because of no leasing within the Sweet Grass Hills ACEC.

Soils and Vegetation: Oil and gas activities could adversely effect natural soils and associated plant diversity. Eighteen exploratory oil and gas wells could result in 54 acres of surface disturbance.

Watershed and Wildlife: There would be no unavoidable adverse impacts.

Cultural: Oil and gas activities could result in an unavoidable adverse impact to historic properties and traditional Native American spiritual practices.

SHORT-TERM USE/LONG-TERM PRODUCTIVITY

This section identifies the trade-offs between short-term use and long-term productivity of the resources involved in the alternatives. Only those environmental elements affected are discussed.

Alternative A

Locatable Minerals and Oil and Gas: There would be no trade-offs between short-term use and long-term productivity.

Soils and Vegetation: Short-term impacts from oil and gas or hardrock mining activities could be mitigated by reclamation measures that would result in long-term soil stabilization and vegetation production. There would be a risk of long-term soil productivity loss as a result of open-pit mining.

Watershed: Current laws, regulations, and mitigation serve to protect the existing water quality in the Sweet Grass Hills. There is the risk of a long-term loss in water quality, if hardrock mining results in a large release of contaminants to surface and/or ground waters through a spill, leak, or ARD.

Wildlife: An open-pit mine would probably not be back-filled and, therefore, could not be reclaimed to its former habitat value. This would result in the long-term loss of habitat quality on less than 100 acres.

Alternative B

Locatable Minerals: Under this alternative the locatable mineral resources would be withdrawn from entry. Areas with high potential would not be available for exploration to determine if precious metal reserves are present. This would negatively affect the short and long-term potential mineral production in the study area. Changes in mineral economics may not allow for recovery of these resources if the withdrawal is revoked at a later date.

Oil and Gas: Under this alternative Federal minerals in the study area would not be leased for oil and gas. This could negatively affect the short and long-term oil and gas production from Federal minerals.

Soils and Vegetation, Watershed, and Wildlife: There would be no trade-offs between short-term use and long term productivity.

Alternative C

Locatable Minerals: Under this alternative the portions of the Sweet Grass Hills with the best potential for locatable mineral exploration and development would be withdrawn. This would negatively affect the short and long-term potential mineral production in the study area. Changes in mineral economics may not allow for recovery of these resources if the withdrawal is revoked at a later date. Even where claims have been determined valid, economic development may be restricted by the withdrawal limiting opportunities for economies of scale that would otherwise be present with adjacent lands being open to mineral entry as in Alternative A.

Oil and Gas: There would be no trade-offs between short-term use and long term productivity.

Soils and Vegetation: Short-term impacts from oil and gas or hardrock mining activities could be mitigated by reclamation measures that would result in long-term soil stabilization and vegetation production. There would be a risk of long-term soil productivity loss as a result of open-pit mining.

Watershed: Current laws, regulations, and mitigation serve to protect the existing water quality in the Sweet Grass Hills. There is the risk of a long-term loss in water quality, if hardrock mining results in a large release of contaminants to surface and/or ground waters through a spill, leak, or ARD.

Wildlife: An open-pit mine would probably not be back-filled and, therefore, could not be reclaimed to its former habitat value. This would result in the long-term loss of quality habitat on less than 100 acres.

Alternative D

Locatable Minerals: Under this alternative the portions of the Sweet Grass Hills with the best potential for locatable mineral exploration and development would be withdrawn. This would negatively affect the short and long-term potential mineral production in the study area. Changes in mineral economics may not allow for recovery of these resources if the withdrawal is revoked at a later date.

Oil and Gas: There would be minor trade-offs, similar to those described in Alternative B, between short-term use and long term productivity due to no leasing within the ACEC.

Soils and Vegetation, Watershed, and Wildlife: There would be no trade-offs between short-term use and long term productivity.

IRREVERSIBLE OR IRRETRIEVABLE RESOURCE COMMITMENTS

This section identifies the extent to which the alternatives would irreversibly limit potential uses of the land and resources or irretrievably use, consume, destroy or degrade those resources. Only those environmental elements with irreversible or irretrievable resource commitments are discussed.

Alternative A

Locatable Minerals and Oil and Gas: There would be no irreversible or irretrievable commitment of resources.

Soils and Vegetation: Oil and gas and hardrock mining activities could cause the permanent loss and displacement of natural soils and associated plant diversity. Twenty exploratory oil and gas wells could result in 60 acres of surface disturbance. With hardrock mining there could be an irretrievable commitment of soils and vegetation for an estimated 50 to 100 acres. However, stabilization of soils and revegetation would occur, after reclamation, with negligible long term impacts.

Watershed: Current laws, regulations, and mitigation serve to protect the existing water quality in the Sweet Grass Hills. However, if hardrock mining results in a large release of contaminants to surface and/or ground waters through a spill, leak, or ARD, water sources could be degraded to a point which violates drinking water standards. This could require abandonment, replacement of water sources, or expensive clean up operations. This would be an irretrievable commitment of water resources.

Wildlife: An open-pit mine would probably not be back-filled and, therefore, could not be reclaimed to its former habitat value. This would be an irretrievable commitment of less than 100 acres of wildlife habitat.

Cultural: Oil and gas activities could result in an irretrievable commitment by impacting historic properties and limiting traditional Native American spiritual practices.

A hardrock mining operation within Tootsie Creek basin could result in the permanent loss of the traditional Native American spiritual practices associated with this area. This would be an irretrievable commitment of cultural resources.

Alternative B

Locatable Minerals: Portions of ore bodies not developed due to the withdrawal may not be economically recoverable in the future. This would be an irreversible commitment of locatable minerals.

Oil and Gas: This alternative could preclude foreseeable oil and gas activity on Federal minerals in the study area. Only one or two of the 20 wells anticipated to be drilled on Federal minerals would be drilled which could eliminate recovery of the resource.

Soils and Vegetation, Watershed, Wildlife, and Cultural: There would be no irreversible or irretrievable commitment of resources.

Alternative C

Locatable Minerals: Portions of ore bodies not developed due to the withdrawal may not be economically recoverable in the future. This would be an irreversible commitment of locatable minerals.

Oil and Gas: This alternative could eliminate recovery of oil or gas from 1 or 2 wells on Federal minerals because of the no surface occupancy restriction in the Sweet Grass Hills ACEC.

Soils and Vegetation: Oil and gas and hardrock mining activities could cause the permanent loss and displacement of natural soils and associated plant diversity. Eighteen exploratory oil and gas wells could result in 54 acres of surface disturbance. With hardrock mining there could be an irretrievable commitment of soils and vegetation for an estimated 50 to 100 acres. However, stabilization of soils and revegetation would occur, after reclamation, with negligible long term impacts.

Watershed: Current laws, regulations, and mitigation serve to protect the existing water quality in the Sweet Grass

Hills. However, if hardrock mining results in a large release of contaminants to surface and/or ground waters through a spill, leak, or ARD, water sources could be degraded to a point which violates drinking water standards. This could require abandonment, replacement of water sources, or expensive clean up operations. This would be an irretrievable commitment of water resources.

Wildlife: An open-pit mine would probably not be back-filled and, therefore, could not be reclaimed to its former habitat value. This would be an irretrievable commitment of less than 100 acres of wildlife habitat.

Cultural: Oil and gas activities could result in an irretrievable commitment by impacting historic properties and limiting traditional Native American spiritual practices.

A hardrock mining operation within Tootsie Creek basin could result in the permanent loss of the traditional Native American spiritual practices associated with this area. This would be an irretrievable commitment of cultural resources.

Alternative D

Locatable Minerals: Portions of ore bodies not developed due to the withdrawal may not be economically recoverable in the future. This would be an irreversible commitment of locatable minerals.

Oil and Gas: This alternative could eliminate recovery of oil or gas from 1 or 2 wells on Federal minerals because of no leasing within the Sweet Grass Hills ACEC.

Soils and Vegetation, Watershed, and Wildlife: There would be no irreversible or irretrievable commitment of resources.

Cultural: Oil and gas activities could result in an irretrievable commitment by impacting historic properties and limiting traditional Native American spiritual practices.

CHAPTER 5 - CONSULTATION AND COORDINATION

Consultation and coordination has been an important part of this planning amendment since its beginning when the Bureau of Land Management (BLM) segregated the Sweet Grass Hills from mineral entry on August 3, 1993. Public meetings, informational mailings, contacts with other governmental agencies, Native American tribes, and the general public were used to gather input for the Sweet Grass Hills Amendment and Environmental Impact Statement (EIS). This input helped define what issues needed revisiting in this amendment and what issues were previously resolved with current management guidelines. Coordination and consultation continued throughout the review of the draft and preparation of the final amendment/EIS.

The BLM either briefed or otherwise contacted Federal, state, and local agencies concerning what aspects of public land management in the Sweet Grass Hills may require analysis and amendment. Involved Congressional staffs, county commissioners, and tribal councils were also briefed.

Consultation under Section 7 of the Endangered Species Act has been completed with the U.S. Fish and Wildlife Service (USFWS). Results of this process are given in Appendix C.

Consultation under Section 106 of the National Historic Preservation Act has been completed with the State Historic Preservation Office and the Advisory Council on Historic Preservation for a 19,765 acre withdrawal from mineral entry. Results of this process are given in Appendix C.

The BLM invited the public to comment on the draft amendment/EIS and to participate in public meetings. A notice of availability for the draft amendment/EIS and dates for the meetings was published in the Federal Register and in local newspapers.

PUBLIC INVOLVEMENT

A Notice of Intent, formally announcing the beginning of the planning process, was published in the Federal Register on August 26, 1993. The public has been informed of and involved in the planning process through Federal Register Notices, news releases, direct mailings, and public meetings.

Scoping for the Amendment/EIS

Public input during scoping was solicited by two methods; first, an informational letter was mailed to a list of known interested parties; and secondly, meetings were held between September 28, 1993 and September 30, 1993 at the communities of Chester, Browning, and Rocky Boy. In addition, at the request of oil and gas producers and local residents the BLM attended meetings in Shelby and Whitlash. This process resulted in the public sending 109 letters that addressed changes in management for the Sweet Grass Hills. Eighty-five oral responses were received at the public meetings.

Issues receiving considerable attention during scoping are listed below:

Locatable Minerals - This was the issue most commented on. The majority of individuals responding stated that they supported withdrawing all Federal minerals because of non-compatibility with other uses (mining is viewed as single use). They further stated mining would destroy cultural values and Native American religious values. Others were concerned that heap leach mining would cause irreversible damage to water supplies. However, others felt mining could be conducted in an environmentally safe manner.

Leaseable Minerals - Most commentators stated that oil and gas activity should be allowed to continue in the Sweet Grass Hills. They felt oil and gas production constitutes wise use of the land, benefitting the greatest number of people while providing income to the federal government and local economies. Many felt conducting oil and gas activity was environmentally safe. Some commentators opposed oil and gas development and indicated a desire to see this program phased out.

Potable Water - Almost all commentators on this issue expressed concern about protecting water sources. Many referenced the Zortman Mine and reported degradation of water.

National Register - The second most commented on issue was placement of the Sweet Grass Hills into a National Register Historic District. Commentors were split on this issue. Of those opposed the most common theme was that they did not want decisions "in the hands of special interest individuals or groups with no personal connections within the area."

Government Involvement - Commentors indicated fear of too much involvement from government and interest groups. Some were concerned that BLM was putting too much emphasis on Native American religious practices. Some indicated that BLM should “stick to the issue of mining” and not bring up other issues, however, others supported BLM’s role in multiple use management.

Grazing - Most commentors felt grazing should be left as it is, that no environmental problems have occurred, and that grazing is a compatible and traditional use of the land. A few were opposed citing non-compatibility with high quality watersheds.

Access - Most commentors supported public access but many of those felt limitations to protect wildlife and preserve cultural areas was appropriate.

Off Road Vehicle Use - All commentors supported making the ORV closure permanent except one who said the BLM should defer to the wisdom of local ranchers.

Public Comment on the Draft Amendment/ EIS

Public meetings on the proposed withdrawal, as required under 43 CFR 2310.3-1(c)(2), and on the draft amendment/EIS were held between February 27, 1995 and March 2, 1995 in the communities of Shelby, Browning, Chester, and Rocky Boy.

The public meetings were held to allow people to ask questions, allow the BLM the opportunity to respond to questions, encourage the public to submit written comments, and allow written questions and comments to become part of the public record. All of the meetings were well attended, with the average meeting attendance being about 40 people. There were several recurring issues that emerged at every meeting. These issues include; Native American religious concerns, water quality, private property rights, and the effects to the land from heap leach mining. Following is a summary of some of the points that were raised at the meetings.

Many comments supported complete withdrawal of minerals in the Sweet Grass Hills. Much of the public agreed that the Sweet Grass Hills have significant cultural and historical values not only to Native Americans, but also the local citizens. Not only were many in favor of the twenty-year withdrawal, but many wanted the Sweet Grass Hills protected permanently. Although there was concern about withdrawing the Sweet Grass Hill from mining, there was also concern about re-

specting private property rights, especially in regards to the National Historic Register. Several people commented that there should be more studies in the area, including paleontological, cultural, and geological to further support the importance of the Sweet Grass Hills.

Another recurring issue was water quality. There was concern that heap leach mining is not only destructive to the land, but also concerns about polluting water sources. There was a suggestion to further study the amount and destination of pollutants on running surface water as a result of heap leach mining. It was commented that heap leach mining is destructive, but some would support another method of mining to support economic development.

Some comments indicated that the claim holders in the area do have private property rights, and they should be provided adequate compensation. Some individuals made a suggestion to initiate a fund in order to preserve the Sweet Grass Hills, and essentially “buy-out” the Lehmann’s claims, and keep the land protected from mineral activity.

There were a few comments that questioned the philosophy that the entire Sweet Grass Hills area is a religious site, and felt that Native Americans did not use the area as much as they say they do.

Approximately 500 copies of the draft amendment/EIS were mailed to the public on February 8, 1995. Three hundred and ninety seven letters postmarked on or before May 18, 1995 were received and all comments that required a response have been addressed in this final amendment/EIS. Some public input is continually being received on the Sweet Grass Hills but is not being formally responded to in this document. However, all individuals commenting are added to the mailing list and will receive the final amendment/EIS.

In addition to the letters, a mailing of 2,999 “green” post cards were received by the BLM State Director. The post card stated:

Dear Mr. Hamilton,

I strongly urge the BLM to withdraw all federal minerals in the Sweet Grass Hills Study Area from locatable mineral entry, and I support Alternative B of the Draft EIS (no mining) for the following reasons:

Signed, _____

Ninety four percent of the post cards had written comments in addition to the above statement.

Based on the comments received, public input for management of the Sweet Grass Hills did not change from comments received during scoping for the draft amendment/EIS. If anything, those on either side of an issue became more polarized. Much of the discontent with the preferred alternative in the draft amendment/EIS centered around two things; (1) not all Federal minerals (19,765 acres) were to be withdrawn as only those Federal minerals in the ACEC (6,328 acres) plus another 382 of particular importance were designated for this protection and (2) it became apparent that even though BLM could implement this

withdrawal mining might still occur in the Tootsie Creek drainage on valid mining claims and private minerals. Most respondents preferred Alternative B which would withdraw all 19,765 acres and require BLM to request funding and Congressional approval for condemnation authority to buy out valid claims and private minerals.

Public participation activities are listed chronologically in Table 5.1. Complete records of public comments and involvement are on file in the Great Falls Resource Area Office, Great Falls, Montana.

**TABLE 5.1
PUBLIC INVOLVEMENT**

Date	Action
August 3, 1993	Publication in the Federal Register segregating the Sweet Grass Hills from mineral entry for two years.
August 26, 1993	Notice of Intent to prepare an amendment/EIS for the Sweet Grass Hills portion of the West HiLine Resource Management Plan (RMP).
September 1993	An issue brochure was sent to a mailing list of all interested parties, agencies, organizations, and individuals.
September 17, 1993	Federal Register Notice filed, supplementing the Notice of Intent, indicating that public scoping meetings for the amendment do not fulfill the requirements for the withdrawal application. Public meetings on the draft amendment/EIS will meet this requirement.
September 28 to September 30, 1993	Public scoping meetings to identify issues were held in Chester, Browning, and Rocky Boy.
September to October 1993	Briefings were offered and/or held with the Governor's Office, Congressional Staffs, County Commissioners of Liberty and Toole Counties, and Tribal Councils at the Blackfeet and Rocky Boy Reservations.
October 1993	At the request of oil and gas producers and local residents the BLM attended meetings at Shelby and Whitlash.
July 1994	A letter was sent to the mailing list informing the public that the amendment/EIS would address four issues, and that the BLM was beginning a 5-year withdrawal process to extend the time needed to complete the amendment/EIS.
January 24, 1995	Notice of public meetings on the proposed withdrawal published in the Great Falls Tribune.
January 25, 1995	Notice of public meetings on the proposed withdrawal published in the Liberty County Times.
January 26, 1995	Notice of public meetings on the proposed withdrawal published in the Federal Register.
February 8, 1995	The draft amendment/EIS was distributed for public comment. Approximately 500 copies were distributed to the public during the comment period.
February 17, 1995	A Federal Register Notice was published beginning the comment period.
February 27 to March 2, 1995	Public meetings on the proposed withdrawal and draft amendment/EIS.
May 18, 1995	Public comment period on the draft amendment/EIS closed.

CONSISTENCY

The BLM's planning regulations require that resource management plans be "consistent with officially approved or adopted resource related plans of other federal agencies, state, and local governments, and Indian tribes, so long as the guidance and resource management plans are also consistent with the purposes, policies, and programs of federal law, and regulations applicable to public lands."

The BLM will complete a consistency review of the final amendment/EIS with the State of Montana.

DISTRIBUTION LIST

The BLM requested comments on the draft amendment/EIS from interest groups and individuals; from Federal, state, local agencies and Native American tribes. The following is a list of organizations and agencies that received the final amendment/EIS..

County Commissioners

Hill County
Liberty County
Pondera County
Toole County

State

Bureau of Mines and Geology
Department of Fish Wildlife & Parks
Department of Health & Environmental Science
Department of Highways
Department of Environmental Quality
Department of Transportation
Hardrock Mining Impact Board
Historic Preservation Office
Water Quality Division

Congressional

Honorable Max Baucus
Honorable Conrad Burns
Honorable Pat Williams

Federal

Advisory Council on Historic Preservation
Bureau of Reclamation
Bureau of Indian Affairs
Department of Energy
Environmental Protection Agency, Montana

Environmental Protection Agency, Region VIII
Field Solicitor's Office
International Boundary Commission
National Park Service
Office of the Deputy, USAF
U.S. Fish and Wildlife Service
U.S. Forest Service
U.S. Geological Survey

Tribal Councils and Committees

Assiniboine Treaty Committee
Blackfeet Cultural Program
Blackfeet Legal Department
Blackfeet Nation
Chippewa Cree Business Committee
Chippewa Cree Tribe
Coeur D'Alene Tribe
Confederated Salish & Kootenai Tribes
Crow Culture Committee
Crow Tribal Council
Flathead Culture Committee
Fort Belknap Community Council
Fort Belknap Reservation
Fort Peck Tribal Water
Fort Peck Tribes
Gros Ventre & Assiniboine
Gros Ventre Treaty Committee
Kootenai Cultural Committee
Kootenai Culture Committee
Northern Cheyenne Culture Committee
Original Chippewa Cree
Rocky Boy Chippewa Cree
Rocky Boy Cultural Committee

Organizations

Alberta Environment
Alliance for the Wild Rockies
American Wildlands
Arizona State University
Audubon Society, Upper Missouri Breaks
Backcountry Horsemen
Badger Two Medicine Alliance
Blackfeet Community College
Chester Elementary 5th Grade
Coalition for Canyon Preservation
Colorado State University
East Butte TV Club
The Ecology Center
Friends of the Wild Swan
Glacier Two Medicine Alliance
Grassroots for Multiple Use
Greater Yellowstone Coalition
HiLine Amateur Radio Club

Hi-Line Sportsman's Club
Independent Petroleum Association of Mountain States
Island Mountain Protectors
Liberty County Conservation District
Madison Gallatin Alliance
Medicine Wheel Alliance
Mineral Policy Center
Minerals Exploration Coalition
Montana Council of Trout Unlimited
Montana Ecosystems Defense Council
Montana Environmental Information Center
Montana Farmers Union
Montana Geological Society
Montana Land & Mineral Owners Association
Montana Mining Association
Montana Natural Heritage Program
Montana Petroleum Association
Montana Preservation Alliance
Montana Preservation Alliance & National Trust
Montana State University
Montana Wilderness Association
Mount Royal Repeater Association
Mountain States Legal Foundation
National Mining Association
National Trust for Historic Preservation
National Wildlife Federation
Native Ecosystems Council
Nature Conservancy
Northern Montana College
Northern Montana Oil and Gas Association
Northern Plains Resource Council
Northwestern University
Protect Glacier Canyon Coalition
Raptor Research Foundation
Red Thunder Inc
Rocky Mountain Front Defense Council
Rocky Mountain Oil & Gas Association
Sage Creek County Water District
Sierra Club
Simons Rock College
Sweetgrass Hills Protective Association
University of Montana
University of Wisconsin
The Wilderness Society
Wyoming Petroleum Association

Businesses

Aircall Inc
Alme Construction Inc
Amax
Arco Coal
Arrowhead Ranch
Audubon Magazine
Balcron Oil Company

Big Sky Foods
Billings Gazette
Branch Oil and Gas Inc
Braun Intertec
Burlington Northern Railroad
CNR Resources Inc
Coeur D'Alene Mines
Coeur Exploration Inc
Cold Mountains-Cold Rivers Inc
Cominco American Resources
Cranston Corporation
Croft Petroleum Company
Daniels & Associates Inc
David Jones Distributing
Dick Irvin Inc
E K Lehmann & Associates
Environmental Management Association
Ethnoscience
Fauna West Wildlife Consultants
FINA
Frisbee, Moore & Olson
Fulton Producing Company
General Well Services Inc
Geolinear
Great Falls Tribune
Gustauson Association Inc
Havre Daily News
Highline Communications
Historical Research Associates
Horne Engineering
Jack or Celeste Grynberg and Associates
KEMC Radio
KOJM-KPQX FM
KRTV
Lawrence McCarthy and Associates
Liberty County Times
Lyon Oil
Manager & Residents Sweetgrass Lodge
Manhattan Minerals
Manhattan Minerals (US) Ltd
Marathon Oil Company
Marias River Electric Coop
Meissner Ranches Inc
Meridian Oil Company
Montana Oil Journal
Montana Television Network
Motorola Communication & Electronics
Monument Resources Inc
Mount Royal Joint Venture
Mountain Oil & Gas Company
MSR Oil & Gas
Murphy Exploration & Production Company
Norsworthy and Reger
North American Rotor Inc
North Star Mining

Northstar Resources
Northern Montana Oil Services
Douglas B Olson, Attorney
Petrofina Delaware
Wildred L Royer and John M Phelps Law Offices
Phillips Petroleum Company
Powers Elevation Company
Prairie Wireline Service
Quantum Company
Ralph's Radio & Electronics
Ravin Resources Inc
Reynolds Mott Sherwood & Wright
Rice Law Office
Sands Oil Company
Santa Fe Pacific Gold
Schultz & Anderson
Sociotechnical Research Application Inc
The Shelby Promoter
Smith and Guenther
Sociotechnical Research Application Inc
TCI Microwave Inc
Teague Geolocial Inc
Tenneco Oil Company
Texaco Inc
Lloyd Torgerson Inc
3 U Cattle Company
Watts, Griggis and Mcouat
Weed Management Services
Western Breeze
Western Exploration Limited
Jeanne F Whiteing, Attorney at Law
Yellowstone Petroleum
Zortman Mining Inc

Individuals

Helen Ann Aaberg
Phillip Aaberg
Steve Aaberg
Kerstin and Robert Adams
Margaret E Adams
Peter Aengst
Paul Aguilar
Gary C Aklestad
Mmorette F Allison
Mary P Anderson
Wade Anerson
John B Appling
Charley D Armey
Robert G Armstrong
Jean, John and Helen Atthowe
James C Ayers
Joe Azure
Dan Bachman
Kenneth Bangs

Tom Bangs
Julie Waters-Barcomb
Grant Barnard
Erwin and Peggy Bauer
Don Baughman
Tara Beartusk
Henry Bebee
Mary S Beer
Dan Bennett
Peter Bennett
Diane Bergstein
Robert Bergstein
Jerry Berner
Burse Berry
Katherine Berry
John C Quist
Mary Ann Berry
Butch Bert
Beverly Big Left Hand
Delmar Bigby
Joanne Bigcrane
Kate Binkly
Joe Stern
Nettemae Binnie
Duane T Bird Bear
David Bird
Sarah A Bond
Jon Bonnicksen
Aimee Boulanger
Oystein M and Gail M Boveng
Robert and Carolyn Bowles
Michael A Bracken
Mike Bracken
Colby L Branch
Kathryn Brenneman
Almira Brevick
Daniel Browder
Mary F Brower
Buster Brown
Dorothy Brown
Joe Brown
Larry Brown
Tamzin G Brown
Larry N Browning
Dorothy or Robert Brumback
Jerry Buehley
Michael Burke
Ruth Burleigh
Lewis F Burnham
Timothy Byron
Lori Parr Campbell
Kathleen M Carlson
Gladys Carpenter
Bob Carroll
Jeffrey B Case

Mark Chaboyer
Rita E Cheek
Colleen Lehman-Cherry
Tom Chestnut
Steve Christian
Dolores or John M Cicon
Gail or Rudy S Cicon
Mary Lynn Cicon
Pearl Cicon
Tanya Clampitt
Coleen and Calvin Clark Jr
Jay C Clark
Sally Jean Clark
Walter C Clark
Rich Clawson
Catherine Clow
Angie Coffin
Jim Coffman
Aleta Cole
Susan Colvin
Emily Cousins
Burt Crockett
Greg Cullen
Kathleen Curtiss
Ardith Cushing
Don Dahlen
Mike Daily
Thomas B Danenhower
Dixie Davis
Michawl De Anguera
John De Roo
Robert O Delp
Douglas W Demarest
Roberta A Demarest
Andrea Devlin
Jerry Di Marco
Joel Diegleman
Robert Dolezal
Michael Donnelly
Mac Donofrio
J F Dormaar
N J Dow
Rich Doyle
John B Driscoll
Dorothy or John W Duncan
Sheila Duncan
Gary Eagleman
Jackie and Les Eide
Paul English
Mark Engstrom
Susan Epstein
Spencer Shropshire
John Erdman
Eric H Espenhorst
David Evans

Lauran Everson
Joan Farmer
Albert and Gloria Fey
Wilbert Fish
Sasher Fisher
Dennis L Flath
D Fogarty
Mike Ford
Diane Foreman
Luanne Four Colors
Harla J Frank
Lee Franks
Stan Frasier
Faye Freyholtz
Merten or Vicky Freyholtz
Valborg Freyholtz
Errol Fritz
Sister Pat Funderhide
Gregory Furse
Charles J Gallus
Julie Gambill
Jack W Gamble
Richard Garfield
Rex Garlick
Monte Garnett
John Geddie
Darrell Geist
Kenneth and Betty Gilbert
Steven M Gilbert
Rae Ginther
Carleen Gonder
Stormy Good-De Lepper
Agnes Gopher
Robert Gopher
Doug C Gordon
James R Gorson
Bill Gottlieb
Rose Gran
Leonard Gray
F T Graybeal
T Weber and Sally Greiser
Erik M Guss
Lauren Gwin
Ty Hamer
Kathleen Hansen
Shirley Hanson
Becky A Hardey
Hobie Hare
Kelly Harford
Richard Harmon
William Harmon
Adrian Hawks
Floyd Heavy Runner
Bill Hedglin
Ilert and Kay Hellebust

Bob Donald and Maria Hellinger
Janet Henderson
Larry and Janice Hendrickson
Jerry Hendrickson
Karl Henning
Mark W Hertenstein
E Hex
Gracis A Hilde
John Hill Sr
Marilyn Hill
Edi and Wayne Hodges
David P Hofer
Trista L Hoffman
David B Holden
George Horse Capture
Jaylene and Richard W Howard
Joan Humiston
Cristi H Hunnes
Betty and William Hutchison
Tony Incashola
Ben Ish
Dennis Iverson
Jerry Iverson
Wayne R Ivey
Richard or Bernadette Jackson
Ron and Ruth Jackson
Reuel G Janson
Robin Jeppesen
Larry Johns
Bonnie R Johnson
Victor Johnson
Cedron Jones
Sara Taubman
Thomas R Joste
Mary J Kahn
Vicki Kahn
Calvin Kanning
Lyndon Kazick
Billie Keastif
Joseph or Sally Keeva
James M Kelly
Rebecca Kenney
Hugh R and Laura L Kern
Jim Kicker
Merilyn Killsnight
Darrell R Kipp
George G Kipp III
Ken Knudson
Kenneth R Kochel
Chris Kolstad
R F Krawiec
Ron Kroese
Marvin and Carole Krook
Carson E Krook
Holly Krook

Mark Kuehn
Jack Kuntz
Leslie Lafraniere
Christine M or Mark W Lakey
Arlie J Lane
Daecia Laroche
Goni Lauckner
Dave Lavalley
Walter George Lehmann
Charles Leniweaver
Rick Lesh
Peter Lesica
Frank Limpy
Arthur B Lincoln
Don and Mary Lincoln
Jerome Lincoln
Ed Lipp
Ray Lipp
Rodney Little Mouth
Diandra Little Whiteman
Mark Lodge Pole
Susan Long
Charlene Lopez
Clifford and Shirley Lybeck
Delia Lybeck
Jason Lyles
Donald MacDonald III
Patricia Magnano Madsen
Bernice C Maertz
Lori Mailand
Kathy Makich
Doug Malatare
Donald and Harriet Marble
Charlotte Marshall
Clayton Mason
Glenn Mason
Nancy Mason
Warren Matte
David and Karen R Mattson
Irene Mattson
Mary E Mattson
Susan P Mavor
Bruce May
Rudd Mayer
Michael Buffalo Mazzetti
Robert and Terry Mcanally
Mike McCann
Carley McCaulay
Elaine McClure
Jim McCollum
Virgil McConnell
Steve McCoy
Lance and Pat McDowell
David Mcewen
Jerry and Janet McGahan

Patty McGishick
Kathryn L McKay
Dara McKinley
Alison Kirk McNabb
Cecily R McNeil
Bruce Measure
Brooke Medicine Eagle
Donald K Meech
Thomas O Meech
Russell Meech
Gretchen Meier
Dore' Menz
John S Mest
R Jane Meyer
Richard Micheletto
Anne Millbrooke
Neal Miller and Kathryn Hiestand
Elsie Miranti
Joan Mitchell
Glenn Moeller
Glenn Monahan
Joan Montagne
Fred L or Ethel B Montgomery
Ross Montgomery
John P Moore
Margaret R Moore
Peni Moore
Steve Morse
Mona Morstein
Julie Morton
Paul Moss
John Moyes
Angela Mueller
Robert Murie
Pauline Murray
Mark T Nesbitt
Susan Nicholas
Tina Marie Norman
Michael and Margaret Novak
Mary E Knoth Nowicki
John P O'Donnell
Darby O'Brien
Annie M O'Laughlin
Gretchen Olheiser
Milton and Sandy Olson
Rod Oraw
Florence Ore
Michele and Ben Oswood
Lloyd H Oswood
Alice Other Bull
Robert Parker
Betty Parmer
Robert W Parsell
Earl F and Jeanne Patric
Katherine Patric

Phillip Perszyk
Dorothy and Stanley Petersen
Bruce Peterson
R D and June M Peterson
Leo and Mary Petrie
James Phelps
Glen A Phillips
Shirley Pick
Brian Piera
Rich Pittsley
Rachel and Jack Potter
Alison Powell
Jeanne Powell
Nancy Powell
Don and Hazel Powelson
Edwin F Prach
S Premena
Rhonda Radomski
Wallace Rainberry Jr
Gerry Randolph
Michael Ranger or Susie Siedentop
James W Raven
Ed or Vivian M Reeves
Larry M Reevis
Cheryl Arlyne or Cari Reichert
Ken Reick
John B Reubens
Ruth Reynolds
Belle C Richards
Gary Riecke
Mildred Riley
Scott Ringgold
Gretchen Ripp
Gillette Ritter
Robert Roabideaux
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PUBLIC COMMENTS

This section addresses the public comments received on the draft amendment/EIS and the BLM's responses to those comments. All comments, written or oral, were reviewed and considered. Comments that presented new data, questioned facts or analysis, or raised questions or issues bearing directly upon the alternatives or environmental analysis were responded to in this final amendment/EIS. Comments expressing personal opinions and comments and letters received after May 18, 1995 were considered but not responded to directly.

During the comment analysis process, all comments were categorized and coded into 14 areas of concern. These broad categories (A through N) are listed below, along with the topic of each category. Each comment from the public meetings, letters, or comment forms that requires a response is numbered to correspond with the appropriate response number.

A1 to A14	Amendment/EIS Process
B1 to B5	Areas of Critical Environmental Concern
C1 to C15	Alternatives
D1 to D11	Environmental Consequences
E1 to E28	Locatable Minerals
F1 to F8	Oil and Gas
G1 to G9	Soils and Vegetation
H1 to H25	Water Resources
I1 to I11	Wildlife
J1 to J3	Recreation
K1 to K5	Lands
L1 to L26	Cultural Resources
M1 to M9	Social and Economic Conditions
N1 to N3	Public Involvement

The following table contains the organization and/or name of those individuals commenting on the draft amendment/EIS and corresponding comment codes. Some letters did not require a response.

**TABLE 5.2
ORGANIZATIONS/INDIVIDUALS COMMENTING ON THE DRAFT AMENDMENT/EIS**

Letter Number	Organization/Individual	Comment Code(s)
1	Angela Mueller	
2	James Ayers	
3	Cheryl M. Reichert, Arlyne E. Reichert, and Cari M. Reichert	
4	Jack W. Gamble	D1
5	Steve Morse	E1
6	John W. Duncan	E2, E3, H1
7	Advisory Council on Historic Preservation	L1, L2
8	Lyndon Kazizk	J1, J2, J3
9	Rex Gulick	J1, J2, J3
10	Tim Speyer	
11	Marie Hellinger and Donald R. Hellinger	J1, J2, J3
11A	Marie Hellinger and Bob Hellinger	
12	Arlie J. Lane	
13	Becky A. Hardy	
14	Belle C. Richards	C1
15	Donald H. Kern	
16	Ric Valois	
17	Trudy Laas Skari	
18	Carleen Gonder	
19	Cultural Coordinator for the Blackfeet Nation, Curly Bear Wagner	K1, L3
20	Richard Thielges	
21	Mineral Policy Center, William Patric	A3, B1, C2, C3, C4, C5, D2, D3, D4, E4, E5, E17, L4
22	Goni Louckner	
23	Stephanie J. Weigel	J1, J2, J3
24	Hi-Line Insurance, Ray Lipp	E6
25	Charles J. Gallus	

26	Tobi Van Kyck	J1, J2, J3
27	Ben Ish	J1, J2, J3
28	Richard Harmon	
29	Roberta A. Demarest	E1, I1, I2
30	Glacier-Two Medicine Alliance, Lou Bruno	
31	Hope B. Stevens	
32	(unknown)	J1, J2, J3
33	Mark Hertenstein	
34	Harla J. Frank	J1, J2, J3
35	John R. Dormaar	L5
36	David P. Hofer	
37	Gene Sentz	J1, J2, J3
38	Victor Johnson	
39	Sierra Club, Kirk Koepsel	C6, C7, K2
40	Bureau of Indian Affairs	
41	Paul Moss	
42	Liberty County Weed Control District	G1, G2
43	David McEwen	L3
44	Wayne Tufte	
45	Marilyn R. Hill	
46	Susan Wimer	
47	Earl F. and Jeanne Patric	
48	R.F. Krawiec	K2
49	Bill Gottlieb	
50	Mary B. Vant Hull	
51	Erik M. Guss	
52	Julie Waters-Barcomb	
53	Richard Taber	
54	Carley McCaulay	
55	P. Brian Rogers, M.D.	
56	Roberta A. Demarest	A1, I3, L6
57	Native Ecosystems Council, Sara Jane Johnson	C8, G3, G4, G5, G6, H22, I4, I5, I6, K2
58	Alison McNabb	
59	Lauren Gwin	
60	Nettemae Binnie	
61	Sara Smith	
62	Shirley Hanson	
63	Greater Yellowstone Coalition, Lauren Gwin	
64	Andrea Devlin	J1, J2, J3
65	Ron Stirling	
66	Ron Kroese	
67	Jimmy Spell	K2
68	Reuel G. Janson	
69	Mary J. Kahn	K2
70	Brooke Medicine Eagle	
71	Valborg Freyholt	A3, E7
72	Gene and Linda Sentz	D3
73	Mona Morstein	
74	Nancy E. Powell	K2
75	June Thayer	
76	Colleen Lehman	K2
77	Janis Walraven	M6
78	Becky Sutton	K2
79	Susan Epstein and Spencer Shropshire	K2
80	Department of Health and Environmental Sciences, Carole Mackin	H2

81	Carson E. Krook	
82	Rose Gran	
83	Ernest Lehmann & Associates	A2, A3, A4, A13, C9, C10, D5, D6, D7, E8, E9, E10, E11, E12, E13, E14, E15, E16, G7, G8, H3, H4, H5, H6, H7, H8, H9, H10, I7, I8, L7, L8, L9, L10, L11, L12, L13, L14, L23, M1, M2, M3, M4, M5, N1
84	Lariat Trading Company, Don Baughan	
85	Jon Bonnicksen	K2
86	Bruce Measure	H11
87	Wallace Rainberry Jr.	H11
88	Charles and Rachel Potter	K2
89	Elaine McClure	
90	Mike's IGA, Inc., Margaret Novak	J1, J2, J3
91	State Historic Preservation Office, Stan Wilmoth, Ph.D.	
92	Belle C. Richards	
93	Gretchen L. Rupp	
94	Sweetgrass Hills Protective Association, Arlo Skari	J1, J2, J3
95	Marian J. Setter	J1, J2, J3
96	Mary Mattson	J1, J2, J3
97	Cecily McNeil	J1, J2, J3
98	Glenn Mason	J1, J2, J3
99	Frances Stack	J1, J2, J3
100	Ed Prach	J1, J2, J3
101	Friends of the Wild Swan, Arlene Montgomery	H11
102	Ross Montgomery	H11
103	Joe Gutkoski	
104	Jerry & Janet McGahan	
105	Catherine Clow	
106	Steven M. Gilbert	
107	Florence Ore	
108	Montana Council Trout Unlimited	
109	Emily Cousins	
110	Arthur B. Lincoln	
111	Kathy Makich	
112	Katherine Berry	
113	Don Powelson	
114	Erwin & Peggy Bauer	
115	Sister Pat Funderhide	
116	Patricia Magnano Madsen	
117	Thomas B. Danenhowe	
118	Nettemae H. Binne	
119	Leslie Stoltz	
120	Big Sky Foods Trading, Inc., John C. Schwarz	A3
121	Roberta Demarest	
122	National Mining Association	
123	Larry N. Browning	
124	Ron Wehr	C11
125	Toni Wehr	C11
126	Betty J. Palmer	
127	Jole Noyes	H11
128	Mary S. Beer	
129	Susan P. Mavor	
130	Thomas R. Joste	

131	Peter Lesica	
132	Daniel Browder	
133	Villa Mary Immaculate Chapter of the National Trust for Historic Preservation	
134	John R. Swanson	
135	Patti & David Steinmuller	K2
136	Alliance for the Wild Rockies, Jennifer Ferenstein	A3, C2, E17, H12, M6
137	Therese M. Fuais	
138	Ann Wilsheck	
139	Hobie Hare	
140	Kerstin and Robert Adams	
141	Charleen McClure Yellow Kidney	
142	Cristi H. Hunnes	
143	Dorothy M. Brumback	
144	Timothy Byron	
145	Barbara Steele	
146	Kathryn L. McKay	
147	Alma Pablo	
148	Amorette Allison	
149	Robert Roseleip, Sr. and Marie Roseleip	
150	Premena	
151	Law Office of Wilfried L. Royer and John Michael Phelps	
152	Stormy Good-de Lepper	
153	John B. Reubens	
154	Daniel Sullivan	
155	Steve Schombel	
156	Mr. & Mrs. Robert Parker, Jr. and Family, Agnes and Ashely Parker	
157	Sharlon L. Willows	H11
158	Montana Mining Association, Gary A. Langley	A3, E4; E8
159	James W. Stutzman	N2
160	Wade Anderson	
161	United States Environmental Protection Agency, John F. Wardell, Director	C12, D8, E18, F1, F2, F3, F8, H13, H14, H15, H16, H17, L15
162	Kenneth R. Kochel	A5
163	F.T. Graybeal	
164	Gregory D. Zeihen	A6
165	Michael Donnelly	A14
166	E.F. & C. F. Prach	
167	Ritchie Doyle	
168	Martina Roels	A7
169	Minerals Exploration Coalition, Richard F. Horsnail	
170	David Holden	
171	(unknown)	
172	The Confederate Salish and Kootenai Tribes of the Flathead Nation, Michael T. Pablo	B2, C2, L16, L17, L18, L19
173	Mark T. Nesbitt	A8, A9, C15, E8, E19, M7
174	United States Department of the Interior, Bureau of Mines, Michael D. Dunn	A2, C15, D11, H9, E8, E9, E16
175	Smith & Guenther, Patrick L. Smith	A10, C2, E20, L18, L20
176	Minerals Exploration/Management, James M. Kelly	
177	Richard Aurand	C2
178	Harriet Marble	
179	Byron Weber	B3, I6, I9, I10, K3
180	Michael DeAnguera	
181	Grassroots for Multiple Use, Merle D. Lloyd	
182	BJO Ranches Inc.	
183	Douglas W. Demarest	L3

184	Watts, Griffis and McOuatt, Consulting Geologists, Greg Fernette	A3, A6, E21, E22, E23, H18, H19, H20, H21, L21, L22, M8
185	Monument Resources, Inc, Stewart A. Jackson, Director	
186	The Wilderness Society, Sandy McIntyre, Northern Rockies	B4, B5, D9, G9, H22, I11, L26, M9
187	National Trust for Historic Preservation	C2, L24
188	Cominco American Resources Inc., Herbert C. Sakrison, Exploration Manager	
189	National Wildlife Federation, Thomas France, Esq.	C2
190	Tom Chestnut	
191	Janet Henderson	
192	Montana Wilderness Association, Dan Bennett, Chair - MWA Island Range Chapter	E4, E17, F4, F5, F6, F7, F8, H23, I4, K4
193	Bill Scobey-Polacheck	
194	Charlotte Marshall	
195	Upper Missouri Breaks Audubon Society, George N. Engler, Conservation Chair	
196	John C. Quist	
197	Mary Ann Berry	
198	Rick Yates	
199	Donald R. Marble	E24
200	Montana Bureau of Mines and Geology, Rob McCulloch, Staff Mining Engineer	C13, D7, E25, H24
201	Gerry Randolph	
202	Northern Plains Resource Council	
203	The Chippewa Cree Tribe of the Rocky Boy's Reservation	A11, L19
204	The Honorable Pat Williams, House of Representatives	
205	David Evans	
206	University of Wisconsin-Madison, Marvin T. Beatty, Professor and Associate Dean Emeritus, College of Agricultural and Life Sciences	
207	Mike Daily	
208	Jeffrey J. Smith	
209	Richard Spotts	
210	Jack Kuntz	
211	Edward G. Schreiber	
212	Scassaday Family	
213	Trista L. Hoffman	
214	John De Roo	
215	Larry Hendrickson	H25
216	Michael Buffalo Mazzette	
217	Elsie Miranti	
218	Rude Sheet Metal, Craig & Wanda Rude	
219	Gretchen Olheiser	
220	Rich Pittsley	
221	John Erdman	
222	Scott Ringgold	
223	Thompson R. Smith	
224	Mr. and Mrs. Fred.L. Montgomery	
225	Dorin Austin	
226	Corinna Welzenbach	
227	Joanne Bigcrane	
228	Jerry Iverson	
229	Oystein M. & Gail M. Boveng	
230	Bruce May	
231	The University of Montana, Dan Flores, A. B. Hammond Professor of Western History	
232	Leonard Gray	

233	John P. O'Donnell	
234	Julie A. Stoughton	
235	Ruth Reynolds	
236	Coeur D'Alene Tribe, Brenda A. Abraham, Managing Editor	
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243	Julie Mayeda	
244	Walt Anderson	
245	Mary C. Goodby	
246	Adel M. LaCounte	
247	Sharon Small	
248	Mark Fiege and Janer Ore	
249	Law Offices of Terry J. Hanson, Terry J. Hanson	
250	Bevin Barber	
251	Hal Schmid	
252	Friends of the Wild Swan, Inc., Steve Kelly, Secretary/Treasurer	
253	Leon E. Kezar	
254	Carloyn Toyer	
255	Suzanne Shope	
256	Mrs. Edgar Limiou	
257	Ken & Mildred Christian	
258	Anne Ore	
259	M. Ruth Niswander	
260	Kathryn Brenneman	
261	Brian Piera	
262	FaunaWest Wildlife Consultants, Craig J. Knowles and Pamela R. Knowles	
263	Bernice C. Maertz	
264	Susan Nicholas	
265	Mary F. Brower	
266	One Buffalo Ranch, Joseph Keeva	
267	Bary Riecke	
268	Sally Hayton-Keeva	
269	Ilert and Kay Hellebust	
270	Diane Foreman	
271	Peter Aengst	
272	Tribal Chairpersons from across the nation (24 signatures)	N3
273	Diane Bergstein	
274	Rhonda Radenski	
275	Original Chippewa Crees, Geneva TopSky Stump	E26
276	Eric H. Espenhorst	A12, D10, E27, N3
277	Rudd Mayer	
278	Dara McKinley	
279	Aimee Boulanger	
280	Andrea L. Shiflett	
281	Rita E. Cheek	
282	Peni Moore	
283	Susan Long	
284	Pauline Murray	
285	Greg Cullen	
286	R. Jane Meyer	C2, H22
287	Jim Steffek	
288	Sarah A. Bond	

289	Larry R. Johns	
290	Julie Gambill	
291	Alison Powell	
292	Jim McCollum	K5
293	Betty Hutchison	
294	Jeanne Powell	
295	Mrs. Joan Humiston	
296	Stan Frasier	
297	Peter Bennett	
298	The Burce Berry Family	
299	Pamela Xander	
300	Wesley Shelberg	
301	Greg Sauer	
302	Paul F. Torrence	
303	James Phelps	E28
304	Dr. A.G. Scattolini	
305	Richard Garfield	
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309	Glenn Moeller	
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315	D. Fogarty	
316	Mac Donofrio	
317	Don Powelson	
318	Lori Parr Campbell	
319	R.L. Wickum	L25
320	Mary E. Knoth-Nowicki	
321	Lee Franks	
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323	Monte L. Garnett	
324	Anne Millbrooke	
325	Donald MacDonald III	
326	Almira Brevick	
327	N.J. Dow	
328	Robert & Carolyn Bowles	
329	Dale Ann Sherman	
330	Alex Vondrell	
331	Elizabeth Stevenson	
332	Mary Jane Johnson	
333	George Kahrl	
334	Carl D. Mitchell	
335	John L. Stoner	
336	Kimberly Davitt	
337	Richard and Karen Shores and Roberta Cheney	
338	Tracy Jilot	
339	Gary Milner	
340	David Bird	
341	Aleta Cole	
342	Mykel Fiedler	
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344 Rick Lesh
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 346 Joan Rysharry
 347 Frances S. Vandervoort
 348 Wahentah Toineeta
 349 Starlyn Whiteman
 350 Daecia LaRoche
 351 Frank Limpy
 352 Gilma Whitedirt
 353 Kristin Sooktis
 354 Krys Spang
 355 Uriah Two Two
 356 Leslie La Franiere
 357 Sasha Fisher
 358 Tanya Clampitt
 359 Diandra Littlewhiteman
 360 Tana Little Wolf
 361 Rodney Little Mouth
 362 (unknown)
 363 Clayton Mason
 364 Perry BigleftHand
 365 Alice Other Bull
 366 Tara Beartusk
 367 Irena R. Ridge Bear
 368 Marilyn Killsnight
 369 Reno S.
 370 Ray BigLeftHand
 371 Robert Roubideaux
 372 Thaddeus Redbird
 373 Peter Lesica
 374 Tamzin G. Brown
 375 Joan Farmer
 376 Billie Keastif
 377 Richard Clawson
 378 Luanne Four Colors
 379 A. Ukm
 380 Glenn Moeller
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 383 Pegasus Gold Corporation, John S. Fitzpatrick, Director, Community
 and Governmental Affairs
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 385 Erwin and Peggy Bauer
 386 Mary S. Beer
 387 Sandra C. Cahill
 388 Emily Cousins
 389 Nettemae Binnie
 390 Thomas B. Danenhower
 391 Hazel A. Powelson
 392 Sister Pat Funderhide, O.S.U.
 393 Elsie Miranti
 394 Thomas R. Joste
 395 Patricia Magnano Madsen
 396 Leslie Stoltz
 397 Susan P. Mavor

C14, D5, A13

COMMENTS AND RESPONSES ON THE DRAFT AMENDMENT/EIS

This section contains the comments received from individuals and organizations during the public comment period on the draft amendment/EIS. The comments are organized by the 14 categories discussed previously. Following the comment is the response.

CATEGORY - AMENDMENT/EIS PROCESS

A1 Comment: Is the draft EIS format set for the BLM. (56)

Response: The draft amendment/EIS follows the standard format. Based on the regulations for implementing the procedural provisions of the National Environmental Policy Act “agencies shall use a format for environmental impact statements which will encourage good analysis and clear presentation of the alternatives” (40 CFR 1502.10). The regulations provide a “standard format for environmental impact statements” that should be followed “unless the agency determines that there is a compelling reason to do otherwise.”

A2 Comments: “The apparent authority to promulgate the amendment/EIS lies in BLM regulations concerning the preparation of regional management plans. 43 CFR 1610.5-5 . . . No new findings, data, policy, changes in circumstances, or proposed actions which changed the terms of the approved plan were raised by these concerns. There is nothing in the record to support BLM’s decision to revisit the decision to keep the area open for mineral entry made less than two years prior in the West HiLine RMP.” (83)

“Concerns expressed by the ‘public’ are not new — They have been addressed and analyzed repeatedly by BLM in a variety of contexts over at least the past ten years.” and “In view of the extent to which these concerns have been considered and addressed over the past decade, it is disingenuous for the BLM to suggest that potable water and Native American cultural resources are somehow new concerns which require reconsideration of current management practices which were established conclusively by the West HiLine RMP only three years ago.” (83)

“In the whole of the Amendment/EIS document, no significant new data has been presented that would justify amending the West HiLine RMP.” (83)

“The document appears as an attempt to rationalize a change in management position towards precluding mineral exploration and development in the Sweet Grass Hills area. No new data or studies were presented to justify this change of position.” (174)

Response: BLM’s planning regulations provide and are not considered issues in the amendment. These management concerns included rights-of-way, National Historic District, recreation, livestock grazing, and access. These resources will be managed consistent with the West HiLine RMP (BLM 1988b and 1992a).”

The amendment/EIS addresses changes in management from the West HiLine RMP that pertain to the following issues; land tenure adjustment, off-road vehicles, oil and gas leasing, and locatable minerals. The draft amendment/EIS provides a reasonable range of alternatives to address these issues, including leaving the area open to mineral entry to withdrawing all Federal minerals and acquiring private minerals and any valid claims.

The amendment/EIS has been revised to clarify that other management guidance is addressed in the West HiLine RMP including specific management guidance for the Sweet Grass Hills ACEC.

A4 Comment: “BLM’s refusal to approve MRJV’s 1992 Plan of Operations, which was requested in full compliance with BLM’s then existing operating management plan represents a taking of constitutionally protected private property rights. In addition, BLM’s failure to complete action on the Royal East EIS is a violation of MRJV’s constitutionally protected due process rights.” (83)

Response: Under the regulations (43 CFR 3809) BLM must process Plans of Operation for surface disturbing activities in special management areas such as an ACEC. Projects require an approved Plan before work can begin. Mitigating measures needed to prevent unnecessary or undue degradation are required for approval.

The approval of a Plan of Operations does not convey any right or title to the involved lands. Nor does an approved Plan serve as a determination of the validity of any mining claim to which it may relate. The appropriate process for honoring existing property rights in the project area is the validity examination process. Conversely, not approving a Plan of Operations until claim validity is determined does not deprive the project proponent of any property rights.

As part of interim management during preparation of an amendment to the West HiLine RMP the BLM suspended processing of Manhattan Minerals' exploration Plan of Operations MTM-78411 (August 9, 1993). As stated in the August 9, 1993, letter to Manhattan Minerals (US) Ltd. and Mr. Ernest K. Lehmann, "This includes suspending preparation of the final environmental impact statement and suspending project-specific consultation with interested parties under Section 106 of the National Historic Preservation Act. In addition, the BLM will be examining the affected unpatented mining claims in your project area to determine their validity. Long-term management formulated during the RMP amendment process, along with claim validity information, will then be factored into the permitting process and used by BLM to reach a final decision on your proposed exploration plan."

No private property rights were taken and the BLM has not "refused to approve" the pending Plan of Operations. Mount Royal Joint Ventures (MRJV) right to due process are the processes the BLM is currently pursuing (i.e. plan amendment/EIS, validity exam, and the pending plan of operations).

A5 Comment: A withdrawal of the Sweet Grass Hills "would be in direct violation of the Mining Law of 1872 and in direct conflict with the Multiple Use Concept of public lands." (162)

Response: The Secretary of the Interior is authorized to make withdrawals under section 204 of the Federal Land Policy and Management Act of 1976 (FLPMA). Withdrawals are consistent with the concept of multiple use as defined under FLPMA. Section 103 of FLPMA defines multiple use as "the management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all of the resources; . . . and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output."

A withdrawal of the Federal minerals in the Sweet Grass Hills would be subject to valid existing rights consistent with the Mining Law of 1872. A mining claim does not create any rights against the United States and is not valid unless and until all requirements of the mining laws have been satisfied.

A6 Comment: "In three previous released documents, the BLM found no significant impact by proposed mining and exploration activities in the Sweet Grass Hills of Montana." (164)

"Since the companies did their work, and their reclamation, it must be presumed that the EA's done by the BLM, concluded that the exploration would have no significant impact on Native American spiritual resources. If no on-the-ground inventory has been done, how is it that mineral exploration and mining are only now found to have significant, and unmitigatable, impact?" (184)

Response: Based on consultation with Native Americans and environmental assessments, the BLM found no significant impacts for the Santa Fe Pacific Mining exploration proposal (1986) or the Cominco American Resources exploration proposal (1989).

In 1992, the BLM received a proposal from Manhattan Minerals to conduct exploration activity in East Butte. This proposal was larger in size and impact potential than the previous exploration plans. Based on the results of an environmental assessment the BLM withheld approval of the Manhattan Plan of Operations until completion of an environmental impact statement (EIS) due to potential for significant impacts to Native American traditional cultural, religious and historical resources. The increased proposed level of disturbance, considered in combination with additional information on cultural resources, was the basis for the conclusion that impacts were potentially significant. A draft EIS for the Manhattan Minerals proposal was released to the public in January 1993 with similar conclusions. As stated in the draft Royal East Joint Venture Exploration Project EIS, "Impacts to Native American cultural, religious practices and historic values are potentially significant for certain groups or individuals that utilize the area" (page i). As stated on page 24 "the negative impacts of the proposed action to traditional Native American values and practices would be significant."

A7 Comment: Define the term “BLM land.” (168)

Response: BLM land is public land administered by the BLM. Public land being “any land and interest in land owned by the United States and administered by the Secretary of the Interior through the BLM” (Sec. 103(e) of FLPMA).

A8 Comment: “The conclusions of the Draft are contrary to the 1988 and 1992 West HiLine RMPs, and are also inconsistent with the BLM’s previously approved plans of operations regarding the Claims. With regard to Native American cultural values, the Draft does not address two previous IBLA decisions, IBLA 86-1440 and 89-561.” (173)

Response: This amendment/EIS will amend the decisions from the West HiLine RMP with respect to land tenure adjustment, off-road vehicle use, oil and gas leasing, and locatable mineral development. The proposed decisions are inconsistent with the West HiLine RMP thus requiring an amendment per 43 CFR 1610.5-3.

Based on environmental assessments, the BLM found no significant impacts for the Santa Fe Pacific Mining exploration proposal (1986) or the Cominco American Resources exploration proposal (1989). However, the environmental assessment for the Royal East Joint Venture exploration proposal found potential significant impacts to Native American traditional cultural, spiritual, and historical resources. The subsequent draft environmental impact statement (EIS) for this project also came to the same conclusions. The Royal East Joint Venture exploration proposal was larger in size and impact potential than the previous exploration proposals.

The text has been revised in Chapter 1 to reference the two IBLA decisions for appeals on previous exploration plans; Santa Fe Pacific Mining and Cominco American Resources, Inc.

A9 Comment: “The Draft should recognize the fact that East Butte is predominantly private lands, part of which are patented mining claims.” (173)

Response: Chapter 1 of the amendment/EIS discusses the location of the planning area including surface and subsurface ownership. The East Butte area contains 35,894 acres, of which 4,322 surface areas (12%), 7,628 acres of all mineral estate (21%), and 1,444 acres of only oil and gas estate (4%) are administered by the BLM (Table 1.1).

A10 Comment: “For the BLM not to recognize, anticipate and avoid the devastating impacts to the Hills that would result from mining claims that result in a heap leach mine would, itself, be arbitrary and capricious conduct and a breach of its fiduciary duty owed to tribal nations whose culture and religions are associated with the Sweet Grass Hills.” (175)

Response: The BLM’s draft amendment/EIS is based upon consideration of relevant factors and followed applicable laws and regulations. The draft amendment/EIS addresses the affected environment (Chapter 3) and the impacts of reasonably foreseeable development associated with mining activities in the environmental consequences (Chapter 4). In particular, cultural resources including “Current Spiritual Use/American Indian Religious Freedom Act Concerns” are discussed on pages 19 to 23 of the draft amendment/EIS. The impacts to cultural resources, under Alternative A which assumes further exploration and mining could occur, are discussed on pages 32 and 33 of the draft amendment/EIS.

The preferred alternative has been revised to withdraw all Federal minerals (19,765 acres) and provides protection of the Sweet Grass Hills within BLM’s statutory authority. Further as public land administered by the BLM, the Sweet Grass Hills are managed on the principles of multiple use. As such areas of traditional spiritual importance to Native Americans are among the management considerations but are not the sole management consideration.

A11 Comment: “The Chippewa Cree Tribe would like to see our concern as a specific resource issue, that is, the cultural, religious and spiritual importance of the Sweet Grass Hills to Native Americans.” (203)

Response: Land use conflicts with the cultural, religious and spiritual importance of the Sweet Grass Hills to Native Americans is one of the main purposes and needs for the plan amendment. Issues have been identified through scoping and resource monitoring that have the potential to address these conflicts under varying management alternatives. These issues are land tenure adjustment, off-road vehicle use, oil and gas leasing, and locatable mineral development.

A12 Comment: “The U.S. Congress is presently revising the 1872 Mining Act, and BLM should consider delaying its review of the projects proposed for Sweet Grass Hills until Congress revises the law.” (276)

Response: Presently, the BLM has a plan of operations for an exploration proposal on East Butte. This exploration proposal is on hold pending completion of this amendment/EIS. The BLM is obligated to process plans of operation within the existing laws and regulations.

- A13 Comment:** “Any action by BLM to eliminate any existent private property rights in the Sweet Grass Hills (including valid existing mineral rights) is a clear violation of the Fifth Amendment to the United States Constitution and will result in a ‘taking’ of these private rights.” (83)

“I wonder if the proposed withdrawal would constitute a federal taking action” and “if the operator has complied with the proper procedure, on what grounds would the BLM now remove this right to conduct exploration?” (383)

Response: The Fifth Amendment to the United States Constitution provides that private property shall not be taken for public use, without just compensation. It is well established that a mining claim is a form of property protected by the Fifth Amendment. Best v. Humboldt Palcer Mining Co., 371 U.S. 334, 335-8 (1963); United States v. Locke, 471 U.S. 84, 107 (1985). However, the Fifth Amendment does not require compensation for an invalid mining claim. U.S. v. Bagwell, 961 F.2d 1450, 1456 (9th Cir. 1992); Skaw v. United States, 13 Cl.Ct. 7 (1987), aff’d, 847 F.2d 842 (Fed. Cir.), cert. denied, 488 U.S. 854 (1988). In Skaw, the court reiterated several principles for determining the validity of a mineral claim, including:

—A mining claim does not create any rights against the United States and is not valid unless and until all requirements of the mining laws have been satisfied. One of these requirements is the actual physical finding of a valuable mineral deposit within the limits of the claim. [Citations omitted.]

—When land is closed to location under the mining laws subsequent to the location of a mining claim, the validity of the claim cannot be recognized unless the claim was supported by a valid discovery at the time of the withdrawal. A mining claimant has no rights to endeavor to make a discovery after a withdrawal and thus prevent the United States from devoting the land to other uses. [Citations omitted.]

Skaw at 28-29.

The withdrawal would be subject to valid existing rights and would not effect any valid mining claims. The amendment/EIS has been clarified in Chapter 2 that a withdrawal would be subject to valid existing rights. Under the preferred alternative acquisition of any valid claims or private land/minerals would be on a willing seller basis.

- A14 Comment:** Will “the mining and exploration companies be compensated for known mineral discoveries?” (165)

Response: The withdrawal would be subject to valid existing rights. Any claims found to be valid based on a discovery can be explored and/or developed. If the claim holder is a willing seller, the claim could be purchased at fair market value.

CATEGORY - AREAS of CRITICAL ENVIRONMENTAL CONCERN (ACEC)

- B1 Comment:** The “draft EIS fails to adequately explain how mining activities, and potentially a large scale open pit cyanide process mine, can be congruous with the ACEC objectives.” (21)

Response: The environmental consequences (Chapter 4) clearly points out that mining activity would be detrimental to Native American traditional practices and possibly to potable water, as well as other resources for which the ACEC was established. This is the reason the BLM is amending the West HiLine RMP and proposing withdrawal of Federal minerals from mining claim location. As discussed on page 3 of the draft amendment/EIS, “Allowing mining while attempting to protect resources for which the Sweet Grass Hills ACEC was designated may not be feasible.”

- B2 Comment:** “Any threat to the integrity of an ACEC protected resource—whether originating within or outside of an ACEC’s boundary—shall be prevented or opposed by the District Manager and appropriate action taken promptly (45 Fed. Reg. 57328).” (172)

Response: The BLM, and District Manager, took the appropriate action based on the environmental analysis for the Royal East Joint Venture Exploration Project and public comment. Based on this information the BLM decided to take another look at management for the Sweet Grass Hills and question whether a decision made in the West HiLine RMP was in the best interest of the needs of the affected public. Allowing mining while attempting to protect

resources for which the Sweet Grass Hills ACEC was designated may not be feasible. Therefore, on August 3, 1993, the BLM segregated 19,765 acres of Federal mineral estate from locatable mineral entry in the three buttes of the Sweet Grass Hills so a plan amendment could be completed to address a withdrawal to protect areas of traditional spiritual importance to Native Americans, aquifers that provide potable water to local residents, potential habitat for reintroduction of endangered peregrine falcons, and seasonally important elk and deer habitat.

B3 Comment: The “main goals of the ACEC as listed on page one I would hope that aesthetics become a main goal.” (179)

Response: A review of the visual resources for the Sweet Grass Hills ACEC in the West HiLine RMP indicates that public input did not carry these scenic values forward into the “importance” and “relevance” criteria analysis as specific management goals for the ACEC. The West HiLine RMP does state that the quality of the scenic (visual) values on public lands throughout the planning area will be maintained which includes the BLM land in the Sweet Grass Hills ACEC (page 14 of the West HiLine RMP). Surface developments on the public land will be designed or mitigated to complement and harmonize with the natural features and the Visual Resource Management (VRM) class objectives. These VRM ratings for the public land in the Sweet Grass Hills ACEC range from most restrictive in Class II to least restrictive in Class III. General management guidelines for VRM Class II state that activities may be seen but should not attract the attention of the casual observer. Class III provides that management activities may attract attention but should not dominate the view of the casual observer. Aesthetic values are not a main goal onto themselves in the Sweet Grass Hills ACEC. However, maintenance of aesthetic values is consistent with all of the main goals of the ACEC and is a component of one of those goals, “protecting areas of traditional spiritual importance to Native Americans.”

B4 Comment: “Beyond acknowledging the existence of the Sweet Grass Hills ACEC (p.1), the DEIS virtually ignores and omits the ACEC throughout the document and analysis. The Alternatives, Affected Environment, Environmental Consequences chapters should all have an ACEC section. The Reasonably Foreseeable Development Scenario should also address ACEC resources. The DEIS fails to analyze the impacts of the preferred alternative on the ACEC’s historic, cultural and scenic

values as well as the fish and wildlife resources.” (186)

Response: All the BLM surface in the Sweet Grass Hills, with the exception of 137 acres, is designated an ACEC. The affected environment in Chapter 3 describes the resources within the ACEC including cultural and wildlife. The reasonable foreseeable development scenarios (Appendices A and B) provide the basis and assumptions for assessing cumulative impacts in the environmental consequences, including impacts to cultural and wildlife resources. A discussion on scenic values has been included in the recreation section of the final amendment/EIS.

B5 Comment: “Page 39 of the West HiLine FEIS states, ‘An activity plan for the ACEC will be developed to provide specific guidance for addressing Native American religious concerns and future development, emphasize the maintenance of elk and raptor habitat, and provide guidelines for orderly development of mineral resources.’ The DEIS makes no reference to such a plan. Has this plan been developed?” (186)

Response: An activity plan for the Sweet Grass Hills ACEC has not been developed.

CATEGORY - ALTERNATIVES

C1 Comment: Alternative “energy could replace the need for oil and gas.” (14)

Response: The purpose and need for amending the West HiLine RMP is a change in management to protect the resource values in the Sweet Grass Hills; traditional spiritual importance to Native Americans, aquifers in the area that provide potable water to local residents, high value habitat for reintroduction of endangered peregrine falcons, and seasonally important elk and deer habitat. Analyzing alternative energy sources to replace the need for oil and gas is beyond the scope of this amendment/EIS.

C2 Comment: The draft amendment/EIS provides no rationale explaining why Alternative C is preferred. (21, 136, 172, 175, 177, 187, 189, & 286)

Response: The identification of the preferred alternative is discussed on pages 9 and 10 of the draft amendment/EIS. As stated, “The rationale for selecting Alternative C is presented for each issue; land tenure adjustment, off-road-vehicle use, oil and gas, and locatable mineral development.” Alterna-

tive C establishes management direction to accomplish public land adjustment and clearly identifies the area where the BLM would like to acquire lands, that being the mineral estate of patented mining claims adjacent to the Sweet Grass Hills ACEC and lands in the vicinity of Devils Chimney Cave. Alternative C would make permanent the management direction that has been in place under an emergency road closure (ERC) implemented in 1989. Keeping the Sweet Grass Hills ACEC closed to this type of activity would enhance the values the area was designated for. Alternative C protects the Sweet Grass Hills ACEC and lands adjacent to and in the East Butte area that are important as potable water sources. ACEC values would be protected, loss of revenues due to drainage would be prevented, and the lands with the highest oil and gas potential would still be available for development. Alternative C would withdraw the Federal minerals within the Sweet Grass Hills ACEC and some adjacent minerals.

Under Alternative C there is the possibility of exploration and or mine development on any claims found to be valid or private minerals. The preferred alternative, and Alternative A, do not require Congressional approval for condemnation of private property and funding for compensation. Alternatives B and D, which would require Congressional approval for condemnation could preclude exploration and development in the Tootsie Creek area of East Butte.

The preferred alternative has been revised to withdraw all Federal minerals (19,765 acres) and retain all BLM lands in public ownership. The Record of Decision will discuss the rationale for the decision that is ultimately made.

- C3 Comment:** “The logic behind the selection of an alternative and why it is preferred should at least be clear. This minimal NEPA expectation has not been met in the draft EIS.” (21)

Response: The draft amendment/EIS identifies a preferred alternative on page 7 with the rationale on pages 9 and 10 and a comparison of alternatives along with the environmental consequences in Tables S.1 and S.2. This is consistent with the regulations for implementing the procedural provisions of the National Environmental Policy Act. As stated in the regulations the BLM is required to “identify the agency’s preferred alternative” in the draft amendment/EIS (40 CFR 1502.14(e)) and “based on the information and analysis presented in the sections on the Affected Environment (40 CFR 1502.15) and the

Environmental Consequences (40 CFR 1502.16), it should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public” (40 CFR 1502.14).

For additional information on the rationale for the preferred alternative please refer to response C2.

- C4 Comment:** The preferred alternative of the draft EIS favors an alternative that would dispose of public land in the hills without rationale and contrary to public sentiment. (21)

Response: The purpose of including land adjustment in this amendment/EIS is to increase the opportunities for public land acquisition adjacent to the Sweet Grass Hills ACEC which would enhance and protect the resource values within the ACEC. Only 137 acres of public land in the study area was proposed for disposal in the draft amendment/EIS (consistent with the West HiLine RMP). This was comprised of “scattered tracts in Middle Butte that are not deemed critical to protect areas of traditional spiritual importance to Native Americans or potable water” (page 10 of the draft amendment/EIS). The preferred alternative has been revised to retain all BLM land in public ownership.

- C5 Comment:** The preferred alternative fails to protect the Hills “or even make an attempt to pursue possible options to protect the Hills.” (21)

Response: The preferred alternative identified in the draft amendment/EIS allows BLM to do what is possible under the agencies regulatory authority, that is withdraw Federal minerals from mineral entry where it is anticipated that a mine may occur in the Tootsie Creek drainage of East Butte. However, without the acquisition of patented or valid unpatented mining claims, the BLM cannot ensure protection of traditional spiritual values or aquifers that provide potable water to local residents. For the BLM to provide absolute protection, Congress would have to appropriate funds and buy the valid claims held by the major claimant, E.K. Lehmann. This concept was analyzed in Alternatives B and D in the draft amendment/EIS providing a range of options or alternatives.

- C6 Comment:** Why would the BLM limit its land acquisition activities to only lands which are immediately adjacent to the ACEC. (39)

Response: Lands adjacent to the Sweet Grass Hills ACEC would classify as high value to the public. Acquisition of lands in these areas would consolidate public lands into contiguous areas of surface estate united with mineral estate. This would facilitate consistent management of all resources in the ACEC. If other lands in the study area are of high resource value, they could be acquired from willing sellers. The preferred alternative has been revised to delete the reference to "only in areas adjacent to" the ACEC.

- C7 Comment:** "The BLM should phase out communications facilities on top of Mount Royal. These facilities greatly compromise the historic and natural integrity of the Sweet Grass Hills. An alternative site should be located that is not in the Sweet Grass Hills." (39)

Response: Right-of-way locations, including communication sites, was addressed as a management issue in the West HiLine RMP (1988). Based on the West HiLine RMP communication sites would not be permitted on the West and Middle Buttes of the Sweet Grass Hills. Mount Royal in East Butte remains open as a communication site location. Mount Royal is the only suitable communication site within a hundred mile radius that can provide service for local residents, commercial users, emergency servers, local fire departments and law enforcement agencies. There are no other sites suitable that would provide the communication services or coverage that is currently provided by the Mount Royal site.

- C8 Comment:** The BLM analysis is clearly flawed by a lack of suitable alternatives. There is too limited a range of options, from protection from oil and gas exploration of only 7,000 acres to protection of no acres out of a total 21,000. If the habitat problems of fragmentation are considered, we believe a range of additional alternatives can be developed which will establish a landscape system of unfragmented habitats within these study areas. (57)

Response: The range of alternatives for oil and gas leasing is from Alternative A (current management) to Alternative B where the BLM would not issue future oil and gas leases in the study area. The study area is fragmented by mixed ownership (federal, state and private). The BLM manages a third of the minerals and is not in a position to set aside large areas of habitat to avoid fragmentation. However, habitat fragmentation is not considered to be a problem in the Sweet Grass Hills from oil and gas activities.

- C9 Comments:** "The amendment/EIS concludes that the issue of oil and gas leasing should be left open for a later date. As a result no real change in oil and gas leasing policy is adopted." (83)

"The preferred alternative contained in the Amendment/EIS leaves the issue of oil and gas development open at this time." (83)

Response: The draft amendment/EIS addressed oil and gas leasing and development and considered a range of alternatives from current management to closing the study area to future oil and gas leasing. The preferred alternative is to lease Federal minerals in the Sweet Grass Hills ACEC with a no surface occupancy stipulation and the remainder of the study area would be leased with standard and special raptor stipulations along with enhanced mitigation to protect ground water. The preferred alternative would amend current management from the West HiLine RMP for oil and gas leasing.

- C10 Comment:** "If the term 'cultural resources' were used to protect Native American religious practices to the extent apparently being requested by the tribes, this would require the elimination of all other uses of the lands in the Sweet Grass Hills and in the outlying areas for hunting, grazing, recreation, communications towers, rights of way, oil and gas development and the elimination of all private property rights in the Sweet Grass Hills. . . . None of the alternatives presented in the Amendment/EIS adequately protect the vague assertions of spirituality throughout the Hills which BLM apparently gives great weight." (83)

Response: The alternatives addressed in the amendment/EIS present a range of management options for the Sweet Grass Hills based on public scoping and resource monitoring. An alternative that would eliminate all other uses (hunting, grazing, recreation, communication towers, rights-of-way, and oil and gas development) within the Sweet Grass Hills to protect Native American religious practices is not practical or feasible.

The alternatives in the amendment/EIS were developed to resolve conflicts and concerns identified through scoping, primarily cultural resources and water quality. In September 1993, an issue brochure was sent to the mailing list of all interested parties, agencies, organizations, and individuals. The brochure identified potential issues to be addressed in the amendment/EIS including; locatable minerals, acquisition of lands, access, off-road vehicle use,

National Register District, recreation, oil and gas leasing, and livestock grazing. Based on public scoping the BLM narrowed the scope of the EIS to four issues; land tenure adjustment, off-road vehicles, oil and gas leasing, and locatable mineral development. As stated on page 4 of the draft amendment/EIS "Several management concerns were considered, during the initial scoping process, but were concerns, which can be resolved with existing management guidance or are beyond the scope of this document and are not considered issues in the amendment. These management concerns included rights-of-way, National Historic District, recreation, livestock grazing, and access. These resources will be managed consistent with the West HiLine RMP (BLM 1988b and 1992a)." It is not necessary or reasonable to preclude other uses that can be managed with the existing guidance in the West HiLine RMP that already restricts such uses to protect the ACEC values, such as: the ACEC is an avoidance area for rights-of-way; no communication sites can be permitted on West or Middle Buttes, forest product disposal will conform to other resource restrictions.

C11 Comment: Alternatives that discuss closing privately owned land to mineral entry are infringing on private property rights. (124 & 125)

Response: The withdrawal would only apply to Federal minerals and is subject to valid existing rights. Any minerals that would be acquired, through purchase or exchange, would be added to the withdrawal. Under the preferred alternative, all acquisitions would depend on a willing seller.

C12 Comment: "The EPA believes that the preferred alternative should be revised to have the BLM discourage further exploration and development on remaining valid claims, and actively pursue acquisition of valid claims within and adjacent to the ACEC rather than to simply encourage holders of such claims to relinquish their claims. We draw your attention to question 2b of the 'Forty Most Asked Questions Concerning CEQ's NEPA Regulations,' printed in the Federal Register Vol. 46, No. 55, 18026-18038, March 23, 1981. Q. Must the EIS analyze alternatives outside the jurisdiction or capability of the agency beyond what Congress has authorized? A. An alternative that is outside the legal jurisdiction of the lead agency must still be analyzed in the EIS if it is reasonable. A potential conflict with local or federal law does not necessarily render an alternative unreasonable although such conflict must be considered." (161)

Response: Under Alternatives B and D, the BLM would pursue the relinquishment of any valid claims through purchase, exchange, condemnation, or conservation easements from private sources. As stated in the draft amendment/EIS "purchase or condemnation would require congressional approval." The regulations require that BLM consider reasonable alternatives not within their jurisdiction (40 CFR 1502.14(c)) but they do not require that BLM choose this as the preferred alternative. The alternatives in the draft amendment/EIS provide the range of alternatives consistent with the regulations.

C13 Comment: If "you can't manage it [Sweet Grass Hills ACEC], why not sell or exchange it to the private sector." (200)

Response: The West HiLine RMP/EIS identified the public land in the Sweet Grass Hills for retention due to the high public and resource values.

C14 Comment: "It appears that the agency not only failed to seriously consider alternatives developed in addition to the applicant's proposal, but may have also failed to assess mitigating measures generated from identified issues and concerns." (383)

Response: This comment refers to the Royal East Joint Venture Exploration EIS (1993) rather than the Sweet Grass Hills Amendment/EIS (1995). The proposal from the applicant was addressed in the draft Royal East Joint Venture Exploration EIS which considered three alternatives; the no action, the applicant's proposal, and a modified alternative addressing less road construction (BLM, 1993). Mitigating measures to the applicant's exploration proposal were developed to address issues and concerns. However, this mitigation did not reduce impacts to an acceptable level. Therefore, in August 1993, the BLM suspended processing this exploration proposal while formulating long term management along with claims validity information through this amendment./EIS.

C15 Comment: "An additional alternative to the current management/no action alternative needs to be developed which does not preclude economic development of as much of the foreseeable resource as possible while still mitigating cultural and watershed resources." (174)

"The Draft assumes there are no conditions under which Native Americans would permit mineral activities to be conducted. Sincere efforts should be made to ascertain if mining activities could be con-

ducted in a manner respectful of Native American spiritual values.” (173)

Response: Current management allows the Sweet Grass Hills to remain open to mineral entry while applying management guidelines to ensure the orderly development of locatable mineral resources to protect the Sweet Grass Hills ACEC values. However, current management cannot always mitigate impacts below significance (draft Royal East Joint Venture Exploration Project EIS, 1993). The range of alternatives in the amendment/EIS would withdraw all Federal minerals (19,765 acres) or those minerals in the higher elevations within the ACEC (6,750 acres or 56% of the high occurrence potential lands). The BLM is not aware of another alternative to those already considered in the amendment/EIS.

CATEGORY - ENVIRONMENTAL CONSEQUENCES

D1 Comment: What is the difference in environmental effects (water and air) between mining on public land versus private land. (4)

Response: If the resources are similar in each situation, there would be no difference in environmental effects. The draft amendment/EIS considered that mining could occur either on Federal or private minerals. As stated in the environmental consequences, Chapter 4 of the draft amendment/EIS, “hardrock exploration and development . . . could occur on either Federal minerals, private minerals, or most likely a combination of Federal and private minerals” (pages 27 and 38). The environmental effects for Alternatives A and C are based on this assumption.

D2 Comment: The draft amendment/EIS discusses “the significance of the Sweet Grass Hills, but then it essentially ignores that significance by failing to address potential consequences of presently proposed mineral activities.” (21)

Response: The exploration proposal submitted by Manhattan Minerals is addressed in the draft Royal East Joint Venture Exploration Project EIS (1993). There are no other proposals pending with BLM for hardrock exploration or development in the Sweet Grass Hills. Reasonable foreseeable exploration and development activities are discussed in Appendix A on pages 64 and 65 of the draft Sweet Grass Hills amendment/EIS. These reasonably foreseeable future actions are the basis for assessing cumulative

impacts in the environmental consequences in the draft amendment/EIS as referenced on page 27 and discussed in Chapter 4. The amendment/EIS addresses the cumulative impacts from both further exploration and potential mine development.

D3 Comments: The draft amendment/EIS “fails to discuss the profound negative impacts . . . to the cultural and social well being of Native Americans or . . . to the region’s sole source aquifer.” (21)

“Alternative C fails to describe the negative impacts that mining would have on the profound values of the Hills.” (72)

Response: The BLM recognized that the two principal issues from potential mining in the Sweet Grass Hills were impacts to cultural resources and water quality. The environmental consequences are discussed in Chapter 4 in the sections labeled “Impacts to Cultural Resources” and “Impacts to Watershed.” Those impacts discussed under Alternative A, Current Management, describe effects from both further exploration and either a potential open-pit mine or underground mine as described in Appendix A.

D4 Comment: BLM does not describe the impacts that would result from the hypothetical mine development scenario presented in the document. (21)

Response: Since BLM did not have an actual mine proposal we used our best expertise based on location, knowledge of the mineral resource and other factors to develop a reasonably foreseeable development (RFD) scenario for hardrock mining (Appendix A in the draft amendment/EIS). The basis of the impact discussions throughout the environmental consequences (Chapter 4) was this RFD. As stated on page 27 of the draft amendment/EIS, “Reasonably foreseeable actions are the basis for assessing cumulative impacts.”

D5 Comments: “The Royal East EIS addressed potential adverse impacts to Native American cultural resources, and . . . No significant impacts to potable water or Native American cultural resources were found.” (83)

Why, “after previously published environmental assessment documents failed to do so, the agency now finds potentially significant impacts to both hydrologic resource and cultural values?” (383)

Response: The draft Royal East Joint Venture Exploration Project EIS (1993) identified potential

significant impacts to Native American traditional cultural, religious and historical resources but did not identify significant impacts to water resources. The Royal East Joint Venture exploration proposal was larger in size and impact potential, in particular impacts in the vicinity of Devil's Chimney Cave, than the previous exploration proposals (Santa Fe Pacific Mining and Cominco American Resources).

- D6 Comment:** "Areas of low mineral potential are left open for location. Absolutely no explanation is made as to why mineral development in areas of low mineral potential would have less impact on potable water or Native American cultural resources." (83)

Response: Mineral development in the areas with low occurrence potential may still have the same impact on water quality or cultural resources; however, the likelihood of such impacts occurring is less because the probability for mineral activity is low. Mining activity in areas with low mineral potential is not reasonably foreseeable.

The preferred alternative has been revised "requesting that [all] the Federal minerals in the Sweet Grass Hills study area (19,765 acres) be withdrawn from locatable mineral entry for a 20-year term." This includes areas with high and low mineral potential.

- D7 Comments:** Absent "an actual Mine Plan, it is premature and scientifically and environmentally unsound to presuppose whether, how and in what way a particular mining operation would affect resources in the area." (83)

Evaluate "the activities proposed and not the imaginary development." (200)

Response: The regulations for implementing the procedural provisions of the National Environmental Policy Act require an EIS to address cumulative impacts (40 CFR 1508.7). "Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions" (40 CFR 1508.7). As stated on page 27 of the draft amendment/EIS "Reasonably foreseeable future actions include potential land acquisitions, oil and gas exploration and development, and hardrock exploration and development. Reasonably foreseeable actions are the basis for assessing cumulative impacts." The reasonable foreseeable development scenario for locatable minerals is contained in Appendix A. The Appendix shows two hypothetical mining operations (open-pit and underground) that

are somewhat representative of possible future development. As stated on page 65 of the draft amendment/EIS, "These operations were derived from known mines and geologic conditions in the area. They are presented only to illustrate the possible variations in mine operations that could occur, and are not intended to be definitive as to mine size, type, processing, or economics." These two mine scenarios formed the assumptions for the impact analysis (cumulative) in Chapter 4 as required by NEPA.

- D8 Comment:** "The cumulative effects analysis should summarize the site specific impacts of past, current, and reasonably foreseeable projects and occurrences upon the physical and ecological resources such as water quality, air quality, vegetation, wetlands and other special aquatic sites, and wildlife, as well as on the health of the ecosystem and important cultural resources." (161)

Response: As stated on page 27 of the draft amendment/EIS "reasonably foreseeable future actions include potential land acquisitions, oil and gas exploration and development, and hardrock exploration and development. Reasonably foreseeable actions are the basis for assessing cumulative impacts" and "the foreseeable oil and gas or hardrock exploration and development described in Appendices A and B could occur on either Federal minerals, private minerals, or most likely a combination of Federal and private minerals." These are the only activities that are reasonably foreseeable that would affect the study area.

- D9 Comment:** The "DEIS does not address the impacts of water use, withdrawal and potential contamination to fisheries, riparian vegetation and downstream users." (186)

Response: The analysis is based on the reasonable foreseeable development scenario for locatable minerals contained in Appendix A of the draft amendment/EIS. As discussed in the draft amendment/EIS "A pit and pad in upper Tootsie Creek would alter the natural flow characteristics of the creek. Impacts would occur to flow, channel morphology, riparian vegetation, aquatic life, water quality, and recharge to down gradient wells, seeps, and springs. The degree of the impacts is impossible to predict but is dependent upon the location and construction methods used in the pad and pit" (page 30 of the draft amendment/EIS). Tootsie Creek, the area of reasonably foreseeable hardrock activity, is not a perennial stream and no fisheries exist. Further environmental assessment would be completed if and when a mine plan of operations is received by the BLM.

D10 Comment: “The EIS must look at the entire appropriate ecosystem and how the mining may alter that ecosystem.” (276)

Response: The draft amendment/EIS addresses the impacts of foreseeable mining on the study area which includes all three buttes of the Sweet Grass Hills. The affected environment, Chapter 3, describes the pertinent natural resources and economic and social conditions found in the study area consistent with 40 CFR 1502.15 and the environmental consequences, Chapter 4, describes the environmental, social, and economic consequences of implementing the alternatives consistent with 40 CFR 1502.16.

D11 Comment: Under “which EIS alternative were the RFD scenarios developed? The basis for our question is that the RFD scenarios show an unusual situation in which an underground mine would produce more gold than an open pit mine on the same site. It was explained to me by BLM staff that more resources could be accessed by underground methods because surface restrictions would place constraints on the physical size of the pit. Are these restrictions related to withdrawals proposed under alternative C (the preferred alternative) or do they exist under alternative A (current management) as established in the Sweet Grass Hills Record of Decision?” (174)

Response: The reasonably foreseeable development scenarios, in particular the hypothetical mine models, are presented to illustrate the possible variations in mine operations that could occur and are the basis for assessing cumulative impacts. These scenarios were derived from known mines and geologic conditions and were not developed for a particular alternative. The hypothetical mine models apply to all alternatives for assessing potential cumulative impacts. The restrictions referred to are physical restrictions such as the removal of overburden (waste rock) and the difference between disseminated deposits (open-pit mine) and lode deposits (underground mine). This physical restriction relates to all alternatives.

CATEGORY - LOCATABLE MINERALS

E1 Comments: How would there be an irreversible commitment of locatable minerals. (5)

“On page 47 of the draft upper left column of Locatable Minerals: Portions of ore bodies not developed due to the withdrawal may not be economi-

cally recoverable in the future. This would be an irreversible commitment of locatable minerals. I question that suggestion as well. It is just as believable that with advanced technology and adequate laws governing mining that minerals of any value and location may become recoverable without fiscal liability.” (29)

Response: The withdrawal of Federal minerals would not allow further exploration in an area that constitutes 20 percent of the high occurrence potential lands in the Lewistown District. As long as the withdrawal is in effect it is an irreversible commitment since no further exploration would occur to define a potential minable deposit.

E2 Comment: Cominco American Resources drilled three holes in the Tootsie Creek drainage, instead of the nine referred to in the draft amendment/EIS, and the well logs show there is sulfide ore in the Sweet Grass Hills. (6)

Response: Cominco American Resources were permitted to drill nine holes but only drilled three in 1989. This has been clarified in Chapter 1 of the final amendment/EIS. Samples taken during the drilling and surface mapping indicate the presence of some sulfide minerals in the Tootsie Creek area, primarily disseminated iron sulfide (pyrite). Massive sulfide veins were not identified in this area.

E3 Comment: What “percentage of bentonite is used in” the slurry mentioned on page 30 of the draft amendment/EIS? (6)

Response: Drill holes are plugged with a bentonite slurry consisting of 25 pounds of bentonite to 150 gallons of water from top to bottom with a 5 foot cement plug at the surface. Alternatively, instead of the bentonite slurry, a commercial granular bentonite can be used for plugging of drill holes.

E4 Comments: The draft amendment/EIS suggests that the acreage involved can range from several single acres to several hundred and that an operation on East Butte would be less than 100 acres. The respondent states that the “statement is inappropriate and biases the analysis by understating the potentially devastating impacts a large modern gold mine could inflict upon a finite landscape like the Sweet Grass Hills.” (21)

“What evidence exists to support the conclusion that a proposed mine would not exceed the range of acres described in the EIS?” (192)

Hypothetical mining scenarios are speculative and based on conjecture, not on actual experience. (158)

Response: The hypothetical mine scenario was developed for the purpose of estimating cumulative impacts from mining in an area where no previous mining has been conducted. The RFD is based on inferred mineral resource capabilities of the lands involved, and applies conditions and assumptions with minimal geologic data to support them. The hypothetical mine model is based on actual mines in other areas of the Central Montana Alkalic Province with similar geologic and geomorphic terrain to that of the study area. This does not constitute proof that a deposit is present. The geological and technical data is solely for the purpose of analyzing impacts to resources of exploration and hypothetical mining activity. The impacts from mining in the Central Montana Alkalic Province were used to determine what the potential impact in the study area would be if a mine were proposed. The size of the disturbance was estimated at 100 acres for an open-pit mine and 50 acres for an underground mine.

E5 Comment: “What would a ‘world class’ open pit cyanide heap leach gold mine mean to [the Sweet Grass] Hills?” (21)

Response: There are no sample data to support, or preclude, the existence of a “world class” gold deposit in the Sweet Grass Hills. The hypothetical mining scenario as described in Appendix A is consistent with the BLM guidance for Reasonable Foreseeable Development scenarios based on the data available. Without additional supporting data, the hypothetical mine scenario is appropriate for the study area. The development scenario is based on actual conditions in other central Montana areas with active mining in progress and serves as a basis for cumulative impact analysis.

E6 Comment: Small “private mining would probably be acceptable.” (24)

Response: The withdrawal applies to Federal minerals. The 1872 Mining Law does not provide for the discretion by BLM with respect to the type of mining that could occur such as placer, underground mining, or open-pit mining. Private minerals within the study area are not subject to operation under the 1872 Mining Law.

E7 Comment: “BLM’s EIS in its assumptions, pg.27, of the 95 EIS, states: ‘For the purposes of impact analysis there is only a 10% chance that a mine

would ever be developed.’ If that were true why would these various mining companies spend so much time and money trying to get in there?” (71)

Response: The source for the percentage figure used in the document was: Exploration and Mining Geology Second Edition, 1987, by William C. Peters. A explanation of what goes into defining a ore reserve and what is required before a potential property becomes a mine is discussed in Chapter 8 of that document. A 10 percent probability of developing a mine from an exploration project is considered pretty good odds in the mining industry.

E8 Comments: “The supposition that a heap leach vat would have to be located at the head of Tootsie Creek is neither technologically or environmentally sound. . . . A more accurate scenario has been provided as part of these comments.” (83)

“The ‘hypothetical’ mining scenario relied on by BLM . . . assumes that a cyanide heap leach facility would be constructed in the Tootsie Creek drainage — a highly unrealistic assumption, and one which is neither technologically or environmentally wise or even feasible. . . . As has been indicated in discussion of a more realistic mineral development model based on the actual data collected in the area . . . any heap leach facility would, in all likelihood, have to be constructed at a site out away from the core of the Hills and away from recharge areas, where proper leach pads and control and monitoring systems could be constructed.” (83)

“The BLM should exercise sound engineering practices in developing its two hypothetical mining operations. Both hypotheticals use poor information and therefore contain poor, inaccurate conclusions. For example, it is ludicrous to presume a prudent, responsible mine operator would place a cyanide heap leach pad in the headwaters of Tootsie Creek. . . . a reasonable hypothetical model based on known mines and geologic conditions particular to East Butte should be used. In fact, it is unacceptable for the Draft to not consider a hypothetical model utilizing the plans of the owner of the Claims. These plans describe how the owner intends to develop the Claims.” (173)

An “example of a presumed ‘unavoidable’ watershed contamination problem based on unreasonable assumptions is that of leaked or spilled processing fluids. The concern centers on a hypothetical processing scenario that uses a heap leach facility located proximal to a mining operation in upper Tootsie

Creek. As contamination of this watershed is of major concern, an optional, but not considered, alternative would be to locate the facility outside of important watersheds. Also, other processing methods such as vat leaching could be evaluated in lieu of heap leaching.” (174)

“The EIS indicates mine/mill models are presented only to illustrate the possible variations in mine operations that could occur and that they are not intended to be definitive as to mine size, type, processing, or economics. The mine/mill models chosen for inclusion in the EIS could become key points in making important decisions and establishing policy based on the document. Although the models and associated values are not intended to be definitive, they are the only ones presented; it is likely they will be viewed as being definitive. Therefore, they must be more than purely hypothetical and should be based on as much information and geologic inference as possible.” (174)

“The mining development scenario contained in these comments and available at Appendix A, which is based on conservative estimates formulated from real data, shows that direct and indirect payroll from a realistic mining scenario would easily add 10 percent to the total wage base of Toole and Liberty Counties, and would provide a significant boost to permanent high wage employment in the area.” (83)

The “economic benefits of mining in the area to the involved counties appear to be underestimated.” (158)

Response: The hypothetical mine scenario is based on active existing mines located in similar terrain in central Montana. This is necessary since there is no existing mine in the Sweet Grass Hills to use as a model. The data submitted by the claimant indicated that the target of the exploration conducted, to date, is gold and silver. The data supplied is listed in the reference section of the amendment/EIS. The data in these reports and sources is primarily geochemical and assay data from drilling and surface rock chip samples showing precious, and base metal content. There is no data that relates to technical aspects of mining for these or other samples from this area. No data was submitted that shows what problems might be associated with samples of rock from this area. Without specific data, there is no reason to assume that special mitigating measures which include offsite facility location, vat leaching or water treatment plan installation are justifiable under the regulations. The reasonable and foreseeable development scenario is

used to determine what the impact of mining would be on resources present in the Sweet Grass Hills. It is not intended to define the existence of a minable ore body.

The economic impacts are based on the employment and income parameters found in the hypothetical mining scenarios.

For additional information please refer to response E16.

E9 Comments: “BLM has access to an extensive data base on the occurrence and value of locatable minerals but has ignored this data. Contrary to the statement in the Amendment/EIS that ‘no specific data was submitted’, Amendment/EIS at 12, BLM has had access to all technical data in the possession of the Mount Royal Joint Venture (‘MRJV’) . . . Ernest K. Lehmann & Associates of Montana, Inc. (‘ELAM’) made available to BLM its entire technical files on East Butte on an unrestricted basis . . . MRJV made available or offered to make available to BLM voluminous data on West Butte, Middle Butte and Grassy Butte.” (83)

“BLM has ignored information available to it indicating that potentially economic grade mineralization has already been delineated in outlying buttes, confirming widespread occurrence of gold deposits in the Sweet Grass Hills.” (83)

“BLM has ignored past history of exploration and more recent extensive stream sediment, soil and rock sampling indicating a number of areas on East Butte, besides the Tootsie Creek area, with geologic conditions that have a high potential of leading to the discovery of world class gold deposits . . . BLM has deliberately ignored assay data provided to it which demonstrates conclusively that world class gold deposits not only can, but do exist in the Sweet Grass Hills.” (83)

“In the area of mineral resources and mining, more explanation is needed for the EIS’s choices in mine/mill models and reasonably foreseeable development (RFD) scenarios. The EIS states that no specific data were submitted to support reports of high gold and silver concentrations in the Breed Creek and Tootsie Creek areas. This statement appears to be in conflict with the fact that company data from thousands of rock and trench samples and hundreds of drill hole samples recently collected in these areas were submitted to BLM. Please explain what was meant by ‘no specific data was (sic) submitted’ and

describe the data used, and assumptions made from that data, for determining the RFD scenarios.” (174)

Response: The data supplied to the BLM is valuable, and was used, to classify the lands in the study area as having a high occurrence potential for precious metal and moderate development potential for precious metal deposits (page 11 of the draft amendment/EIS). The data available to BLM indicates that there is precious metal mineralization that justifies further exploration. The data available is listed in the reference section of the amendment/EIS.

Since 1983 there have been four drilling exploration projects conducted in the study area by different operators. None of these projects resulted in a mine proposal. These efforts found some areas with favorable mineralization but they also condemned areas where no mineralization was found. The fact that none of the exploration conducted, to date, has resulted in a mine proposal can be interpreted in one of two ways: (1) The reserves of precious metals defined by these efforts are not sufficient to justify mining at current prices, or (2) The exploration has not been sufficient to define an ore grade deposit.

E10 Comment: “In analyzing the mineral potential of the lands proposed for withdrawal, BLM has failed to consider comparisons with similar geologic environments that have been highly productive of mineral wealth.” (83)

Response: The occurrence potential and development potential for mineral resources was based on geology for this area. Development potential refers to the potential of the lands to support actual mine development while occurrence potential indicates whether the geology is favorable for mineral occurrence in anomalous amounts. The reasonably foreseeable development scenarios used to assess cumulative impacts are based on actual conditions in other central Montana areas with active mining in progress.

E11 Comment: “In its analysis of the ‘affected environment’ BLM makes the unwarranted and incorrect statement that ‘the Sweet Grass Hills, unlike other areas of recent mining activity, have no history of productive gold mines,’ from which BLM draws the erroneous conclusion that ‘more conventional lode deposits do not exist.’ This statement and the conclusion it draws are incorrect on several grounds. First, there is a history of placer gold production from Middle Butte, giving rise, in fact, to the name ‘Gold Butte.’ These occurrences and the mention of gold in streams such as Tootsie Creek, when coupled

with an understanding of gold occurrences in similar environments, suggested to alert observers that there was indeed a high potential for gold production in the Sweet Grass Hills.” (83)

Response: The statements referenced from the draft amendment/EIS are correct. There are no records of productive gold mining in the study area. A small amount of gold (2,000 ounces) was recovered from placer operations in Two Bit Gulch on the north slope of Gold Butte within the Middle Butte complex (page 11 of the draft amendment/EIS). Placer gold was also mined in Eclipse Gulch (outside the study area) around the turn of the century but follow up efforts to discover the source of the placer deposit and open a mine did not occur. The Sweet Grass Hills, unlike other areas of recent mining activity (Judith, Moccasin, and Little Rocky Mountains), have no history of productive gold mines. This may be an indication that the more conventional lode deposits do not exist or are not as readily apparent and that the recent exploration is the first venture into defining disseminated gold deposits in the Gold Butte mining district (page 12 of the draft amendment/EIS).

E12 Comment: “At West Butte, BLM has ignored geologic and sample data available to it demonstrating that the West Butte area could host one or more world class gold deposits.” (83)

Response: The data available does not indicate the existence of a world class gold deposit in the area of West Butte. The data available for West Butte is geochemical samples taken from streams and surface rock and soil samples. There are no subsurface samples from conventional drill holes that show any indication of mineralization at depth. In addition, at this time there are no claims located on Federal minerals in West Butte.

E13 Comment: “BLM has down-graded the mineral potential of Middle Butte in spite of recurrent mineral exploration in the area, past placer production and extensive rock and soil geochemical data as well as drilling that substantiates significant gold occurrences in the area.” (83)

Response: The Federal minerals in Middle Butte are rated high occurrence potential for precious metal resources. The data supplied for Middle Butte shows the existence of a classic vein type gold deposit. The mineralization is concentrated in narrow zones from 6 inches to 2 feet wide with no mineralization outside of the zone. It was for this reason that the hypotheti-

cal mine model considers an underground mine as well as an open pit type mine. The data supplied to the BLM by the various companies active in the area and the other agencies involved was used appropriately in determining mineral occurrence potential.

E14 Comment: “BLM is incorrect in its basic assumption that exploration in the Sweet Grass Hills has not identified a mineable ore body. Ample evidence has been presented to BLM that a potentially minable deposit exists at Tootsie Creek in East Butte. The mineral claims located in this area by MRJV are sufficient to meet the tests for discovery under the mining law.” (83)

Response: All of the information submitted, by the claimant, was used in the preparation of the occurrence and development potential for all three of the buttes in the Sweet Grass Hills. The data submitted confirmed the conclusion that Federal minerals on all three buttes are rated high for occurrence potential.

An examination of the 14 mining claims located on East Butte in the Tootsie Creek area was conducted during the summer of 1994. In November of 1995 the results of this examination and subsequent analysis were completed. The “discovery” of a valuable mineral deposit as required under the Mining Law was determined to exist on eight of the 14 mining claims. The claimant was notified and the BLM issued a news release as to these findings.

E15 Comment: “Prohibiting mining while allowing other uses which also impact on water and cultural resources is in violation of the mining law and of BLM’s mandate to manage the public lands for multiple use.” (83)

Response: The withdrawal of land from the operation of the mining law is necessary since there is no discretion under the current regulations for mitigation of impacts beyond preventing unnecessary or undue degradation. All other federal actions have a “no action” alternative which includes denial of the permit. There is no such option in permitting actions under the mining law. That is why closing the area to all other surface disturbing activities is not necessary. They can be precluded at the time they are proposed, if the impacts are unacceptable.

E16 Comment: “Since the two ‘hypothetical’ models included as Table A.1 in the Amendment/EIS are unrealistic in terms of size, life and economic impact, an alternative and more realistic model is” provided. (83)

“It appears that larger mine/mill model scenarios that the ones included in the EIS should have been considered. ...The current holder of mineral rights in the Tootsie Creek area, Ernest K. Lehmann & Associates of Montana, Inc., believes the existing data indicates the potential for a gold deposit of 100 million tons containing up to 1 million troy ounces of recoverable gold. The models included in the EIS show operations that are approximately 20 times smaller than the company’s model. ...why didn’t the EIS give the company’s model the benefit of the doubt and use it for the hypothetical scenario.” (174)

Response: The mine model presented by the commentor gives no indication of the exact location of the facilities or the mine method to be used in extracting the gold. It mentions contracting out the mining and recovery to a company which would be responsible for mining and reclamation. The cut off grade of the ore is shown as .006 ounces per ton and the total reserves are shown as 104 million tons.

Commentors representing both preservation interests and mineral development interests have expressed that the hypothetical mine scenarios in the draft amendment/EIS are too small. Each side references mine scenarios similar to those occurring at Zortman and Landusky mines as being appropriate, presumably for different reasons. Mine development interests evidently feel that the foregone economic benefits from development of a large 100 million ton disseminated gold deposit argue in favor of leaving the Sweet Grass Hills open to mineral entry. Preservation interests favor the a large 100 million ton mine development scenario because they feel that the attendant potential environmental impacts of such a scenario would argue overwhelmingly in favor of withdrawing the entire Sweet Grass Hills. Despite these perspectives, the mineral data available to date does not indicate the existence of such a mineral deposit with any reasonable probability. The hypothetical mine models presented in Appendix A are judged to be appropriate for predicting cumulative impacts. This is supported by the recent validity examinations on East Butte. Results of this detailed examination identified a reasonable prospect of success in developing a valuable mine with the same general size characteristics as that presented in Appendix A.

E17 Comments: Could an open pit mine be expanded into withdrawn areas? Could leaching or milling facilities or waste rock be placed upon withdrawn areas?” (136)

The “document does not make it clear if...mining related activities that do not include locatable mineral entry could still be conducted on withdrawn lands. Could an open pit, for example, be expanded into ‘withdrawn’ areas? Or could leaching or milling facilities or waste rock be placed upon ‘withdrawn’ land?” (21)

“Could an open pit be expanded into withdrawn areas?” (192)

Response: Federal minerals that are not open to the operation of the mining law would not be available for the expansion of an open pit mine. In addition, Federal surface over Federal minerals withdrawn would not be available for mining activities such as leach pad construction, waste rock, or milling facilities. In situations with private surface over Federal minerals withdrawn, it would be at the discretion of the private landowner concerning the disturbance of the surface. In situations with Federal surface over private minerals, the BLM must provide reasonable use of the surface for exploration and development of the minerals. Reasonable access across Federal lands to private lands would also be provided.

E18 Comment: The commentor “believe[s] as much information as possible regarding Sweet Grass Hills ore and waste rock mineralogy and geochemical characteristics that influence potential for acid production should be disclosed in the EIS. . . . A complete disclosure of the data that has been collected, and an expanded discussion of the potential for acid production should be included in the final EIS to address the public concern as completely as possible.” (161)

Response: As the commentor has noted, the limited geological data that as been collected does not give an indication for ARD potential from possible mining in the Sweet Grass Hills. Data regarding acid producing potential has not been collected and is not available without conducting extensive surface disturbing activities. Indicators are present in the form of pyrite occurrence and iron oxide staining. There, ARD is presumed to be a potential issue should a specific mine plan be proposed. The hypothetical mine scenarios are presented for the purpose of cumulative impact analysis for the proposed withdrawal. Should further exploration be conducted in this area and a mine plan developed, this additional information would yield a more comprehensive analysis. However, ARD sampling and details cannot be predicted without a specific mine plan.

For additional information please refer to response E2.

E19 Comment: “How can . . . [BLM] justify not approving a plan of operations and thereby make it very difficult for Lehmann to satisfy the BLM’s requirement of proving a physical exposure of ore grade mineralization on each claim?” (173)

Response: Where a mining claim is located on land which is subsequently withdrawn from appropriation under the mining laws, the mining claim must be supported by a discovery at the time of withdrawal, in this case August 3, 1993. A withdrawal does not have an affect on valid existing rights. E.K. Lehmann’s claims are pre-withdrawal and constitute such a right for those determined to be valid. Alternative A considers, as a reasonable foreseeable future action, approval of the existing exploration plan as proposed by Manhattan Minerals. Under Alternative C “The validity examination process for the 14 existing mining claims in the Tootsie Creek area of East Butte would continue...In the event of a finding of discovery on any of the claims, the proposed Royal East Joint Venture Exploration Project (BLM, 1993) could be processed in the future” (page 38 of the draft amendment/EIS). Eight of the 14 claims have been determined by BLM to be valid, since the draft amendment/EIS was published.

E20 Comment: “The hypothetical mining scenario in the draft EIS suggests that a mine would be ‘less than 100 acres.’ Yet the Zortman-Landusky mine in the Little Rockies is already 1400 acres.” (175)

Response: The hypothetical mining scenario is not based on the Zortman, Landusky or Golden Sunlight mines. The geology and geography of the Sweet Grass Hills is similar to that of the Judith and North Moccasin Mountains. The size of the hypothetical mine and associated disturbance is similar to existing mines in other central Montana areas. Reasonably foreseeable future actions, such as locatable mineral development, are the basis for assessing cumulative impacts. Predicting impacts from the hypothetical mine scenario is of no value, and misleading, unless it is reasonable and foreseeable. Mines with the size and scope of Zortman, Landusky and Golden Sunlight do not meet either of these criteria.

E21 Comment: “The Document states on page 12 that ‘The Sweet Grass Hills...have no history of productive gold mines.’ Yet on page 11 its states that gold was produced at Gold Butte.” (184)

Response: The statements referenced from the draft amendment/EIS are correct. There are no records of productive gold mining in the study area. A small amount of gold (2,000 ounces) was recovered from placer operations in Two Bit Gulch on the north slope of Gold Butte within the Middle Butte complex (page 11 of the draft amendment/EIS). Placer gold was also mined in Eclipse Gulch (outside the study area) around the turn of the century but follow up efforts to discover the source of the placer deposit and open a mine did not occur. The Sweet Grass Hills, unlike other areas of recent mining activity, have no history of productive gold mines. This may be an indication that the more conventional lode deposits do not exist or are not as readily apparent and that the recent exploration is the first venture into defining disseminated gold deposits in the Gold Butte mining district (page 12 of the draft amendment/EIS).

E22 Comment: The document implies “that the Sweet Grass Hills have low potential for economic mineral resources.” (184)

Response: The occurrence potential for the Sweet Grass Hills is clearly stated as high (page 11 of the draft amendment/EIS). High development potential is based on production from existing mines at current gold prices. The lack of established mining in the study area makes the development potential moderate to low.

E23 Comments: “The hypothetical open pit operations is internally inconsistent” and “It is highly unlikely that Manhattan Minerals or any mining company would waste their money looking for such a deposit [42,000 ounce deposit with a grade of 0.06 ounces per ton].” (184)

“The underground model understates the operating cost” and “An underground mine producing ore at 0.35 ounces per ton would be marginal at best.” (184)

Response: The hypothetical heap leach mine model was developed from an existing economic mine which is operating in the North Moccasin Mountains near Lewistown, Montana. The reserves and ore grade are economic in this case.

The hypothetical underground mine model was based on a mine that operated in the Judith Mountains near Lewistown, Montana, in 1989. The ore grade was, in fact, economic and the mine did operate for a two year period.

E24 Comment: If “alternative ‘C’ is selected, no one is informed as to the probable consequences would or could a full-scale heap leach gold mine result. If so, how many acres will be impacted and within the permit boundaries?” (199)

Response: The impacts from both a hypothetical heap leach and underground mine operation were analyzed in the environmental consequences section, Chapter 4. The impacts were based on superimposing existing impacts from actual mines in a similar geologic setting on the Tootsie Creek portion of East Butte. This is the only area where enough patented land and pre-existing mining claims are located to have a potential mine proposal as a future possibility. The total area of disturbance is estimated at 100 acres for an open-pit mine and 50 acres for an underground mine (pages 65 and 66 of the draft amendment/EIS). The eight valid claims in East Butte total about 100 acres.

For additional information please refer to response E4.

E25 Comment: “A range of expected development possibilities or even probable mining development scenarios would be preferred to the present one size fits all approach. With whatever analysis that is done, a table of geologic geotechnical, and metallurgical assumptions must be provided to establish the parameters of the models.” (200)

Response: The hypothetical mine model is based on existing mines in a similar geologic setting. There is no mine proposed for the study area and no detailed metallurgical, mineralogical or geotechnical data for mining purposes. Without the site specific data, expanding the range of parameters would serve no purpose in limiting the models that might be possible. The accuracy in predicting potential impacts would not change from those described in the alternatives using the hypothetical mine models from Appendix A of the draft amendment/EIS.

E26 Comment: The BLM should “disallow the existing mining claims because they have not been filed in accordance with State law, and are therefore invalid.” (275)

Response: Federal statutes establish basic requirements governing the location of mining claims and permit them to be supplemented by State laws which are not inconsistent with Federal law. Within this framework there are requirements that lode claims cannot exceed 1,500 feet in length along the strike of

a vein and 300 feet in width on each side of a vein. However, there is no limit to the size of a mineral-bearing vein. In fact, a vein may be wider than the maximum width of a lode mining claim (600 feet). In today's mining industry, the focus is on low grade disseminated gold deposits. This type of ore body is less distinguishable than the classic lode vein, thus hard and fast rules that worked well in earlier times have been redefined in case law.

In summary, the relationship between the actual course of a lode vein and the position of the mining claim's lateral boundaries and center line does not affect the validity (or the filing requirements) of a claim so long as the claim has been located in good faith for mining purposes. The requirement is that a discovery is physically exposed somewhere within the limits of the claim (Apex and Extralateral Rights Raised by the Stillwater Mineral Patent, M-36955, 93,I.D. 369 at 378, April 18, 1986).

E27 Comment: "Are the mining proposals before BLM finalized and detailed? Do those proposals contain assurances that the leachate will not escape and if it does will the companies fully abate all damage? Does the BLM call for complete restoration of the landscape and viewscape after mining operations cease?" (276)

Response: There are no mining proposals for the Sweet Grass Hills before the BLM for review or approval. Presently, the BLM has a plan of operations for an exploration proposal on East Butte. This exploration proposal is on hold pending completion of this amendment/EIS. The reasonably foreseeable future actions, or the hypothetical mine models in the amendment/EIS, are for the purpose of determining impacts from mining for assessing cumulative impacts. This level of cumulative impact analysis is being employed before making a decision on a withdrawal for the Sweet Grass Hills as required under 43 CFR 1502.16 and 1508.7. The level of detail in the hypothetical mine model allows only predicting possible impacts that may occur. It does not allow for detailed site specific impact analysis. There are no data on whole rock analysis of waste and ore rock to be mined since no mine plan has been submitted. These details would receive more technical scrutiny during a mine plan completeness review if one were ever submitted to the BLM.

E28 Comment: "Can you guarantee the 'heap leach' method of mining, proposed to be done, will not cause pollution problems down the road?" (303)

Response: Presently, the BLM does not have a proposal for a mine in the Sweet Grass Hills. There is an exploration proposal that is on hold pending completion of this amendment/EIS. If BLM received a plan of operations for a mine there are provisions built into the permitting process followed by the BLM and Montana Department of Environmental Quality which include consideration of both long and short term environmental impacts. Mitigation of impacts is required by the agencies through modification of the plan or stipulations to ensure that unnecessary or undue degradation does not occur. In addition, all operations must be bonded, before approval, to insure that compliance with the approved plan is carried out.

CATEGORY - OIL and GAS

F1 Comment: "EPA recommends that operators provide a demonstration of cement effectiveness through appropriate tests such as cement bond logs or oxygen activation tests." (161)

Response: The BLM currently has the authority to require well tests, logs, and completion techniques as it deems necessary. The use of cement bond logs may or may not indicate channeling behind pipe. A cement bond log only indicates whether the casing is cemented to the formation or free in the hole. Casing may be cemented on only one side to the formation and still indicate good bond by log response. Oxygen activation tests will not locate potential problems. A better method would be the use of acoustic or noise logs, but this would still not be 100 percent accurate as these logs cannot pinpoint the channel location.

What is not considered in the comment is the potential effects that any remedial actions may have and the effectiveness of those actions. Nearly all of the remedial actions would require selective perforation and cement squeezing. These remedial actions can cause more harm than good and may not be successful. Therefore, the use of these post operation verification tests may simply lead to a sense of false security and cause major financial burdens on an operator without effectively correcting the problem.

A better approach, and one currently used by the BLM in the study area, is to witness the operation to ensure the best primary cement job possible. This is accomplished by; ensuring the hole is in static condition prior to cementing to minimize channeling; ensuring good cement returns to the surface; verify the use of wiper plugs to minimize cement contamination; require the use of adequate fresh water flush

and external scratchers for good bonding between the casing and formations; require the casing to be reciprocated and ensure the use of centralizers to center the casing in the hole and allow uniform cement flow all around the casing; verify that the correct volume of displacement fluid is pumped so as not to over displace; and verify that the pump rate results in cement being pumped in either plug flow or turbulent flow.

F2 Comment: Oil and gas “operators should be required to . . . identify all Underground Sources of Drinking Water aquifers with TDS (Total Dissolved Solids) equal to or less than 10,000 mg/l...[and] identify the location of the lower most Underground Source for Drinking Water.” (161)

Response: Formation tops and depths along with any electric logs are available through the Montana Board of Oil and Gas Conservation or through commercial data supply services such as Dwights and Petroleum Information. For Federal wells, operators are required by regulation to identify any and all formations anticipated to contain fresh water along with their plans for protecting that resource. The BLM does not see the need to require additional information.

F3 Comment: The comment indicates a concern “with the lack of consideration given to, and analysis of, air quality that is presented in the DEIS. The level of activity presented in the Oil and Gas Reasonably Foreseeable Development (RFD) Scenario can reasonably be expected to require installation and operation of compressor engines.” (161)

Response: The reasonably foreseeable development activity over the next 15 to 20 years is the drilling of approximately 60 wells within the study area of which only 20 would be on federal minerals. Assuming roughly the current success ratio, only 12 to 18 wells would result in production of which only 4 to 6 would be federal. This implies that approximately 1 new well would be completed each year. Assuming that these new wells would have similar production capabilities as those of the existing wells, and recognizing that as current production rates decline, new production will be needed just to maintain the current level of production, the current infrastructure should easily absorb the production. Under these circumstances no additional compressors would be needed and no additional impacts to the air quality would be anticipated.

As indicated in the reasonably foreseeable development scenario, pages 73 and 74, it is possible that a large scale exploration operation could occur over a relatively short time period. Under such a scenario, compressors may or may not be necessary depending upon available line capacity. Even if the current production level from the study area were to increase 100 percent, this would only represent an increase in 15 percent for the immediate region around the Sweet Grass Hills. Typically, compressors are designed to operate at something less than 100 percent to allow for such contingencies. Therefore, even under a scenario where 10 new wells are completed in a single year, it is highly unlikely additional compressor facilities would be required.

F4 Comment: “The EIS does not fully evaluate the impacts of oil and gas leasing.” (192)

Response: The impacts from leasing were discussed in detail in the West HiLine RMP EIS and incorporated by reference into this amendment. The oil and gas reasonably foreseeable development information is presented in this amendment to assist the decision makers and readers in understanding the level of development that is anticipated over the next 10-20 years within this study area and the resulting impacts as related to the issues, mainly protection of potable water and protection of cultural resources. The purpose of the amendment is not to re-address all impacts; the purpose is to present a range of additional mitigation options to protect the resources of concern to determine if leasing for oil and gas should continue. Changes in leasing are considered in this amendment/EIS through a range of alternatives including current management (standard and special raptor stipulations), no surface occupancy, and closing the area to leasing. The impacts of these alternatives are fully addressed in Chapter 4 of the amendment/EIS.

F5 Comment: “Will gas migrate into shallow reservoirs (as has happened with approximately 1/2 of all capped wells tested in Alberta) and how would that affect the area?” (192)

Response: The reasonably foreseeable wells in the Sweet Grass Hills study area are greatly different from those drilled in Alberta. The reservoir rocks, geology, depth, and reservoir pressures are vastly different. No reasonable comparison between the Sweet Grass Hills study area and the Alberta wells can be made. Due to the relatively low pressures of the known productive horizons in the Sweet Grass Hills study area, it is not likely that gas will migrate

into the shallow aquifers. It should be noted that the aquifers in the study area produce gas elsewhere in Montana. Therefore, it is possible that gas could already exist in these aquifers. Also, in other areas of Montana, gas does exist naturally in shallow reservoirs such as the Judith River and Eagle sandstone. However, to further ensure groundwater protection, when necessary the BLM would require both the surface and production casings to be cemented along their entire lengths.

F6 Comments: “From 1981-1990, blow-outs occurred once every other week in Alberta’s gas fields. Will new extractive technology completely prevent such occurrences from happening?” (192)

Response: The proposed additional mitigation measures are not designed to prevent blowouts. These measures are intended to enhance the existing protection measures for cultural values and water resources. Further it is not reasonable to compare the likelihood of a blowout within the study area from existing or reasonably foreseeable wells to those drilled in Alberta. We contacted the Energy Resources Conservation Board (ERCB) in Calgary, Alberta, Canada, and based on information ERCB provided, only 35 drilling blowouts occurred between January 1, 1980 and December 31, 1993. A total of 79,344 wells were drilled during this time period. There were an additional 57 blows and 2,871 kicks that occurred while drilling these same wells. This amounts to a blowout occurrence of 1 in 2,267 wells drilled. This is not significantly different for the world average range for drilling blowouts on lands based wells, about 1 in 2,560 wells. The Alberta occurrence for drilling blowouts is therefore about 1 every 21 weeks. From 1983 through 1993, approximately 290 total (drilling, servicing, and other) blowouts occurred as a result of servicing, repairs, failed equipment, etc. There for, blowout occurrence from all sources is about 1 every two weeks. The reasonably foreseeable development scenario for the study area is that 60 wells could be drilled over the next 10-15 years. Using the world average for drilling blowout occurrences (1 in 2,560) and based on an average drilling of 6 wells per year within the study area, the chance of a blowout is about 1 in 427 for any given year. These comparisons do not take into consideration the low pressure gradients, low reservoir pressures, or other productive horizon characteristics, all of which further decrease the likelihood of a blowout occurring within this area to a negligible level. Besides the small probability of a blowout occurring, all drill rigs operating on Federal wells are required to have

blowout equipment to further minimize the chances of a blowout and shut in the well if necessary.

F7 Comment: “What is the additional cost of new extractive technology and what mechanisms and stipulations exist to ensure that they are used and enforced?” (192)

Response: Should enhanced mitigation measures be determined to be necessary, a stipulation would be attached to the approved drilling application. Current inspection strategy for this area is to witness all Federal surface casing cementing. This strategy could easily be modified to allow for witnessing of cementing of the production casing for federal wells drilled in this area. In addition, the BLM has the authority to require well tests, well logs, and completion techniques to test the effectiveness of any mitigation measures imposed. The estimated cost increase is 3 to 6 percent of the drilling costs.

F8 Comment: “What air pollution, associated with the production of sweetened gas, will be generated?” (192)

“The FEIS should also discuss techniques for mitigating or minimizing air emissions, particularly sulfur dioxide from sour gas well flaring.” (161)

Response: The process of sweetening gas can result in the emission of sulfur dioxide, nitrogen oxides, carbon monoxide, carbon dioxide, and particulates. However, nearly all of the gas produced from the study area is naturally sweet and all of the gas marketed from the existing 11 gas wells is sweet. Therefore, no pollution is occurring as a result of sweetening gas. Periodic releases of natural gas occur when pipeline leaks develop or during well testing and completion. Future development may result in the production of sour and sweet gas produced in association with oil production. This quantity is typically negligible when compared to the marketed gas quantity in the area and is often used as fuel to heat the oil treating facilities and storage tanks. In total, the releases of gas from the existing wells is considered negligible. Releases from the reasonably foreseeable wells within the study area is not likely to significantly change. However, future wells will continue to be reviewed through the NEPA process and any changes in impacts resulting from production quantities and quality will be considered. Because, existing and reasonably foreseeable gas production is sweet, impacts resulting from sour gas emissions or flaring of sour gas were not analyzed.

CATEGORY - SOILS and VEGETATION

- G1 Comment:** The commentor suggests “a requirement that all vehicles and equipment used in these operations be washed thoroughly underneath before entering the area to prevent them from introducing noxious weeds from other sites. We also suggest a requirement that access roads, test sites, and mine locations be continually monitored to target any new weed infestations, and that these weeds be eliminated immediately, before they have a chance to spread.” (42)

Response: The reclamation standard for both the BLM and State of Montana includes establishment of “weed free” vegetation on all disturbed surfaces before final approval and bond release is granted. Additional mitigation such as “washing vehicles” is routinely considered during permitting an exploration or mine development proposal.

- G2 Comment:** Should “there be any land withdrawn or any mining claims relinquished to the BLM, that these . . . weed control programs be continued.” (42)

Response: The BLM has the responsibility to control or eradicate noxious weeds on lands administered by the BLM. The BLM will continue to work cooperatively with Liberty and Toole counties and local landowners in developing weed control strategies for the study area consistent with the West HiLine RMP. This will include current public lands under BLM management and future lands coming under the management of the BLM.

- G3 Comment:** What “is the current extent of the noxious weed problem to date with leafy spurge, spotted knapweed, and Canada thistle?” (57)

Response: On public land, current inventories show 6 acres of leafy spurge on West Butte, no known infestations on Middle Butte and 22 acres of spotted knapweed and 1 acre of leafy spurge on East Butte.

- G4 Comment:** “How will continued development affect existing problems [noxious weeds]?” (57)

Response: All activities authorized on public land will be reviewed for their potential to spread noxious weeds and include measures to minimize or avoid increases in existing infestations consistent with the West HiLine RMP. Risk assessments are required to evaluate the likelihood of weed establishment and spread. Depending on the rating, the project can proceed as planned or be modified to reduce the risk

of spreading noxious weeds. Some strategies to reduce spread or establishment might include cleaning equipment before moving into and leaving an area, immediate revegetation and reclamation of surface disturbed areas, using only certified seed, close area to any surface disturbing activities until infestations are under control and, if necessary, provide for control of newly established infestations.

- G5 Comment:** “What has been the effectiveness in the past with controlling the spread of noxious weeds, and if problems still persist, what alternative methods of management will correct these problems?” (57)

Response: The weed prevention and control efforts of the counties and landowners along with the Emergency Road Closure have been helpful in limiting the spread of existing infestations and preventing the spread into “weed free” areas. Under the preferred alternative, continuing the closure to all motorized off-road vehicles would reduce the risk of introducing or spreading noxious weeds. Also, any proposed action will be analyzed for their potential to spread weeds and steps taken to reduce this possibility before the project is approved consistent with the West HiLine RMP.

- G6 Comment:** What “is the BLM doing to monitor and protect sensitive plant species?” (57)

Response: As stated on page 15 of the draft amendment/EIS, the Montana Natural Heritage Program has conducted inventories and maintains a listing of sensitive plant species in the area. The BLM will continue to monitor these unique plant communities and sensitive species. In addition, on-site surveys will be conducted before authorizing any actions that might impact existing plant populations.

- G7 Comment:** “Discussion of soils in the Amendment/EIS omits any discussion of successful revegetation of soils from previous road cuts and trenching. . . . In addition, no mapping of soil types and varieties is provided in the Amendment/EIS. This information is necessary to fully understand the impacts to soils from proposed uses and management options.” (83)

Response: The section in the draft amendment/EIS on “impacts to soils and vegetation” discusses potential impacts based on reasonably foreseeable future actions. As discussed, “In the short term, soil compaction can lead to accelerated erosion and sedimentation. This is generally proportional to the

acreage disturbed. . . . The long term impacts would be negligible after reclamation.” The soils section in Chapter 4 of the amendment/EIS has been revised to indicate revegetation of soils in the area from previous exploration, given normal precipitation, has been moderately to highly successful.

The soil types for each butte in the Sweet Grass Hills are discussed in sufficient detail in Chapter 3 of the draft amendment/EIS (pages 13 and 14). A soils map covering the Sweet Grass Hills is available in the Prairie Potholes Vegetation allocation EIS (1981). This map was adapted from the USDA Soil Conservation Service. Detailed soil surveys are available through the Natural Resource Conservation Service, formerly the Soil Conservation Service, for Liberty and Toole counties. Although unpublished, field offices have the capability to provide specific information, such as physical and chemical characteristics and productivity, for the various soil types found in the study area.

- G8 Comment:** “No mapping of vegetative types or communities is provided in the Amendment/EIS. The locations of these types of vegetation and their relationship to current and proposed uses should be considered and analyzed.” (83)

Response: A complete description of the vegetation communities found in the study area is included in Chapter 3 of the draft amendment/EIS (pages 14 through 16).

- G9 Comment:** “The DEIS briefly discusses impacts to soils and vegetation from off-road vehicle use, oil and gas leasing and development, and from locatable mineral development. It fails to fully acknowledge and analyze the potential for serious erosion and sedimentation problems from these activities. The DEIS also fails to adequately address revegetation of disturbed sites, specifically in the event of low precipitation years.” (186)

Response: The preferred alternative recommends continuing the closure to all motorized off-road vehicles which would eliminate any sedimentation or erosion associated with this activity.

Under the preferred alternative, no impacts are expected for oil and gas leasing and development with leases offered with a “no surface occupancy” stipulation. For the remainder of the study area, leasing would be permitted but stipulations included in the leases to minimize soil and vegetation losses. It is expected that some short-term soil and vegetation loss would occur during construction of drill pads,

roads and pipelines. However, revegetation of these areas would occur within a short time. For any of the oil and gas and mineral development activities, even though rehabilitation attempts may not be successful the first year because of climatic conditions, the BLM will not release the companies bond until reclamation and revegetation of disturbed areas is acceptable.

As described on page 29 of the draft amendment/EIS, activities associated with mineral development are expected to cause short term compaction and accelerated erosion and sedimentation. The extent and degree of severity would depend on the size of the disturbed area. If mining development were to occur, a plan of operations must be submitted for further environmental review which would include detailed reclamation and revegetation plans.

CATEGORY - WATER RESOURCES

- H1 Comment:** How does the Clean Water Act affect mining in the Sweet Grass Hills. (6)

Response: The Clean Water Act is administered by the Environmental Protection Agency (EPA). The EPA has passed administration to the State of Montana via the Montana Water Quality Act which also classified the State’s waters. Waters in the Sweet Grass Hills are classified B-1 and B-2, which allows for slight increases in certain constituents (i.e., pH, turbidity, TDS, etc.) over baseline or natural conditions. Mining activities are limited by the amount of degradation that the B-1 and B-2 classifications will allow.

- H2 Comment:** The comment asks for an evaluation of impacts to Sage Creek Water Users well. (80)

Response: The impacts from mining and oil and gas activities on public lands would most likely be confined to the drainage in which the activity occurs. This has been clarified in the final amendment/EIS. The draft does state the no surface occupancy stipulation for oil and gas applies to public lands in the Sage Creek drainage upgradient of the well. The RFD for mining states that the most probable location for a mine is in the Tootsie Creek drainage. Since neither activity will occur on public lands in the Sage Creek drainage, no impacts are anticipated to the well and further evaluation is unnecessary.

- H3 Comment:** “The Amendment/EIS completely ignores the very real environmental consequences of deep oil and gas drilling on aquifers.” (83)

Response: The impacts to water resources from oil and gas leasing and development are discussed in Chapter 4 of the draft amendment/EIS (pages 29, 36, 40, and 42). This includes a discussion of the implications of casing string leaks migrating into fresh water aquifers.

H4 Comment: “A principal purpose stated by the BLM for preparing this Amendment/EIS is to consider water resources, and yet BLM ignores the data available to it with respect to the area’s surface and ground water hydrology.” The respondent specifically mentions the Prairie Potholes EIS, and 1983 and 1993 USGS studies. (83)

Response: With respect to water resources, the Prairie Potholes EIS was general in scope and does not specifically mention the Sweet Grass Hills water quality. The 1993 USGS study is referenced in the document and the surface and ground sections of the affected environment are partially based on this study.

H5 Comment: “BLM fails to state that there [is] little or no potable water for domestic use within the butte regions of the Hills and that the only source of domestic water is the Sage Creek Water District which would not be affected under foreseeable mining scenarios.” (83)

Response: Water quality is excellent in the upper portions of the streams, but decreases in the downstream direction as it picks up sediment on the plains and ground water contributions from underlying formations (page 16 of the draft amendment/EIS). Also water from alluvial aquifers, including Sage Creek, is often of potable quality. Several of the local farms and ranches do use shallow ground water for domestic use including human consumption. The four aquifer systems in the Sweet Grass Hills are sources for the 90 springs and 40 wells in the study area. Approximately one-half of these springs and wells are used for domestic purposes, while the remainder are used for stock water (page 16 of the draft amendment/EIS).

H6 Comments: “BLM ignores previous studies on the Sage Creek Water District that indicated that there is no foreseeable adverse affect on this potable water resource.” (83)

“BLM states that little information on groundwater hydrology in the vicinity of Tootsie Creek is available. This is directly contradicted by BLM’s own analysis in 1992-93 contained in the Royal East EIS.” (83)

Response: The previous study the respondent refers to is the Royal East Joint Venture Exploration Project EIS. That document states that exploration activities in the Tootsie Creek drainage would not impact the shallow aquifer system in the adjacent Sage Creek drainage. Oil and gas or mining activities have the potential to impact water quality of the shallow aquifer systems if that activity is located in the same drainage as the water source.

H7 Comment: “BLM ignores previous studies on groundwater and the fact that most of this water is not potable.” The respondent specifically mentions the West HiLine RMP and the Royal East Joint Venture Exploration Project EIS. (83)

Response: With respect to water resources, the West HiLine RMP was general in scope describing surface and ground water for 626,000 surface acres and 1,328,000 subsurface acres administered by the BLM. The West HiLine RMP does not specifically address the Sweet Grass Hills water quality. The Royal East Joint Venture EIS primarily addressed water quality in the Tootsie Creek area of East Butte. The draft Sweet Grass Hills amendment/EIS addresses water resources on all three buttes based on available information including a 1993 USGS study of water resources in the Sweet Grass Hills.

Water quality is excellent in the upper portions of the streams, but decreases in the downstream direction as it picks up sediment on the plains and ground water contributions from underlying formations (page 16 of the draft amendment/EIS). Also water from alluvial aquifers, including Sage Creek, is often of potable quality. Several of the local farms and ranches do use shallow ground water for domestic use including human consumption. The four aquifer systems in the Sweet Grass Hills are sources for the 90 springs and 40 wells in the study area. Approximately one-half of these springs and wells are used for domestic purposes, while the remainder are used for stock water (page 16 of the draft amendment/EIS).

H8 Comment: “BLM ignores empirical evidence indicating no impacts to surface or ground water from previous mineral activities.” (83)

Response: Several people who attended the public scoping meetings for the amendment/EIS indicated impacts to nearby water sources from mining activities. The BLM is not aware of any empirical evidence supporting or denying any of these claims. No impacts have been noted to water resources from

recently permitted exploration in 1986 and 1989. Nor have any water quality impacts been noted and attributed to historic mining activities. However, the issue is reasonably foreseeable future mining activity and the potential for impacts to water resources in the Sweet Grass Hills.

H9 Comments: “While acid mine drainage (‘AMD’) is a real (and solvable) problem in some mining operations, it will be a relatively small and relatively easily managed issue with respect to mineral development in the Hills.” (83)

There “is little reason to believe that AMD would be a significant problem in this case due to the geologic setting of the proposed development.” (83)

“The document states that the geologic data collected for the area do not give an indication of ARD potential. ARD is then addressed as if it were a known problem that will occur. . . . Without specific ARD data and analyses as indicated, no conclusive arguments should be made.” (174)

Response: The BLM has not conducted or is aware of any static or kinetic tests of the Sweet Grass Hills lithologies. Until such tests are performed and indicate acid rock drainage is not a potential, BLM will continue to state that acid rock drainage is possible. As discussed on page 30 of the draft amendment/EIS, “The geologic data that has been collected from the Sweet Grass Hills does not give an indication of ARD potential. If ARD is generated by mining activities, its migration may or may not be limited by the naturally occurring carbonate minerals present in surrounding lithologic units.”

For additional information please refer to response H18.

H10 Comment: “BLM states that, in an underground operation, if a release were large or were not detected, contaminants could reach down gradient users. The flaws in this statement are numerous. For example, in any operation, state and federal environmental regulations will require adequate monitoring systems and controls so that no large releases will go undetected. In addition, by its own analysis, BLM concluded in the Royal East EIS that no down-gradient users would be affected by an operation at Tootsie Creek.” (83)

Response: The analysis in the draft amendment/EIS considers State and Federal regulations with respect to water quality along with monitoring. As discussed

in the draft amendment/EIS, “Required monitoring should detect this movement of contaminants [(spill, leak, or ARD)] before it impacts down gradient users.” However, detection is not remediation. Immediate action is needed after detection to prevent contaminants from migrating down gradient. Further the text states, “Emergency cleanup operations should contain the contaminants within or near a mine permit boundary. However, if the release is large or monitoring fails to detect the release, contaminants could reach down gradient users.”

In the Royal East Joint Venture EIS the conclusion was that down gradient uses would not be affected by the exploration project. That analysis was for an exploration project, not a reasonably foreseeable mine development scenario as addressed in the amendment/EIS.

For additional information please refer to response H6.

H11 Comment: The draft amendment/EIS should address ground water impacts from mining. (86, 87, 101, 102, 127 & 157)

Response: The draft amendment/EIS discusses the implications and potential impacts anticipated to ground water from exploration, underground mining, and open-pit heap leach mining (pages 29 to 31 of the draft amendment/EIS). This analysis is based on the reasonable foreseeable development scenario for locatable minerals contained in Appendix A of the draft amendment/EIS. More detailed site specific analysis would occur, through an environmental analysis, if and when a mine plan is submitted to BLM.

H12 Comment: The draft amendment/EIS does not adequately address contamination of the “region’s sole aquifer.” (136)

Response: The draft amendment/EIS discusses four shallow aquifers systems that occur in the Sweet Grass Hills (pages 16 and 17 of the draft amendment/EIS). This includes two principal unconsolidated aquifer systems that are the shallow alluvium of the principal streams, and the interstratified sand gravel in glacial deposits. Also there are two consolidated aquifer systems, the Judith River Formation and the Virgelle Sandstone Member of the Eagle Sandstone. As discussed in the draft amendment/EIS “Water quality sampling from the alluvial aquifer at the Sage Creek and Bear Gulch sites, indicate generally good water quality . . . Water quality from the interstratified

sand and gravel glacial deposits exhibited more variation in water quality. The water was generally suitable for stock watering, but varied from suitable to marginal to unsuitable for domestic use...One sample collected from the Judith River aquifer indicates water quality is marginal for domestic use, but suitable for stock water . . . Water quality from the Virgelle Sandstone is variable ranging from suitable to unsuitable for domestic purposes but generally suitable for stock use.”

The draft amendment/EIS discusses the implications and potential impacts anticipated to ground water from oil and gas leasing and development and locatable mineral development (pages 29 to 31 of the draft amendment/EIS). This analysis is based on the reasonable foreseeable development scenarios for oil and gas resources and locatable minerals contained in Appendices A and B of the draft amendment/EIS. The draft does not state that any impacts from oil and gas or mining activities would most likely be confined to the drainage in which they are located. This clarification has been added to the final amendment/EIS. More detailed site specific analysis would occur, through an environmental analysis, if and when an application for permit to drill or a mine plan is submitted to BLM.

H13 Comment: “The FEIS should include a complete disclosure of the measures that would be designed and used to protect the quality of local drinking water sources. . . . There should be a clear commitment in the FEIS indicating that the BLM will carry out activities in a manner that will ensure that they are in compliance with Montana Water Quality Standards.” (161)

Response: Management for water resources was addressed in the West HiLine RMP. Consistent with the West HiLine RMP, “surface and groundwater quality will be maintained to meet or exceed minimum state and federal water quality standards” (page 8). The Sweet Grass Hills amendment/EIS will not amend that decision. The draft Sweet Grass Hills amendment/EIS discusses general, overall impacts to water quality/quantity if exploration, mining or oil and gas activity occurs on public land in the Sweet Grass Hills. To date, no application for permit to drill (APD) or mine plan application has been received. Specific water resource protection would depend on the type of activity, size, location, and methods used. More detailed analysis, and mitigation, would result if an APD or mine plan is received by the BLM.

In addition, mineral development proposals are initiated by private entities who have the legal obligation to design and operate facilities to protect water resources. While BLM participates in mine plan review and enforcement efforts as they relate to water resources; the Montana Department of Environmental Quality has primary enforcement authority for ensuring that mine operations comply with the Montana Water Quality Standards.

H14 Comment: “The monitoring program to ensure early detection and correction of any surface or ground water quality problems that may occur with the reasonably foreseeable development scenarios (mining and oil and gas) should be described in the FEIS.” (161)

Response: The draft amendment/EIS identifies management changes, or proposed actions, for the Sweet Grass Hills including a withdrawal and revised oil and gas stipulations. This amendment/EIS is not the environmental review for making a decision on an application for permit (APD) to drill or mine plan. Reasonable foreseeable exploration and development activities are discussed in Appendices A and B of the draft amendment/EIS and are the basis for assessing cumulative impacts in the environmental consequences as referenced on page 27 and discussed in Chapter 4. The draft amendment/EIS discusses general, overall impacts anticipated from hypothetical mining and oil and gas activities. A detailed discussion concerning monitoring would require locations, types, extent, duration, etc., of any mining or oil and gas activity. Should BLM receive an APD or mine plan application, more detailed analyses or water quality monitoring would result during the environmental review.

H15 Comment: The commentor asks, “the BLM to review [the Montana Water Quality Division’s listing of impaired streams for the Marias and Milk River Basins] to determine if streams in the Sweet Grass Hills are listed, and if they are listed, to direct and focus BLM resources and management activities to address these water quality problems.” (161)

Response: The streams in the Sweet Grass Hills are not listed by the Montana Water Quality Division as impaired.

H16 Comment: “The FEIS should include a description of the process that will be used to identify and protect wetlands, in those areas where their occurrence is currently unknown, prior to any site disturbance. The FEIS should disclose information about the location, and function and value of, wetlands in the

Reasonably Foreseeable Development (RFD) oil well and mine sites.” (161)

Response: BLM contracted the Montana Riparian/Wetland Association to conduct a wetland inventory of public lands in the Sweet Grass Hills in 1989 and 1990. The following creeks were inventoried; Pratt, Iron, Breed, Little Joe, Corral, Deer, Dohrs, Sage, Tootsie, and Government. Status of the health and function condition of these areas has been included in Chapter 3 of the amendment/EIS.

H17 Comment: “We note that the oil and gas lease stipulations in Appendix B.1 of the DEIS do not specify controls or limitation on surface use or occupancy in or near wetlands. Will stipulations be imposed that would avoid impacts to wetlands from oil and gas leasing, and from mining activities? Will any impact be mitigated?” (161)

Response: Under the preferred alternative, the BLM would issue future oil and gas leases within the Sweet Grass Hills ACEC with a no surface occupancy stipulation. The remainder of the study area would be leased with standard stipulations and special raptor stipulations along with enhanced mitigation measures to protect ground water. The standard stipulations include a controlled surface use which could preclude occupancy within 500 feet, or when necessary, within the 25-year flood plain from reservoirs, lakes, and ponds and intermittent, ephemeral or small perennial streams or 1,000 feet, or when necessary, within the 100-year flood plain from larger perennial streams, rivers, and domestic water supplies (Appendix B.1, draft amendment/EIS). In addition, the standard oil and gas terms allow for relocating an activity for up to 200 meters.

Specific mitigation measures for an exploration plan or mine plan would be identified and addressed during the environmental review for a proposed project. The pending exploration plan submitted by Manhattan Minerals does not include any wetland areas (Draft Royal East Joint Venture Exploration Project EIS, 1993).

H18 Comment: “The potential for ARD is listed as a reason to close the area to mineral entry, yet the Document states that the geologic data on the Sweet Grass Hills gives no indication of the potential for ARD. How can you use no data as the basis for a land management decision?” (184)

Response: Management for the Sweet Grass Hills, including a withdrawal, would preserve areas of traditional spiritual importance to Native Ameri-

cans, aquifers in the area that provide potable water to local residents, high value habitat for reintroduction of endangered peregrine falcons, and seasonally important elk and deer habitat. The potential for ARD is not listed as a reason to preclude mining on public lands in the Sweet Grass Hills.

The draft amendment/EIS does state that ARD could result from underground or open pit mining. Past history of underground mining and recent history of heap leach operations, suggest that despite all safety precautions taken, a release of contaminants to surface and/or ground waters could occur sometime during the mine’s life, associated with either ARD or a leak/spill of processing fluid (page 29 of the draft amendment/EIS). It is true that no static or kinetic tests have been conducted on the lithologies in the Sweet Grass Hills (page 28 of the draft amendment/EIS). There is no supporting evidence known that states ARD will or will not occur, and therefore, the documents states ARD could occur and identifies this as a potential impact.

H19 Comment: The commentor questions the statement in the draft concerning Tootsie Creek supplying ground water to numerous springs, seeps, and wells at the base of the Sweet Grass Hills. (184)

Response: Respondent is correct. The draft amendment/EIS, page 30, should read that “the upper portions of creeks on the east side of East Butte supply water to numerous seeps, springs and wells” rather than “upper Tootsie Creek supplies water to numerous seeps, springs, and wells.” The final amendment/EIS has been corrected.

H20 Comment: The commentor is concerned about the statement in draft amendment/EIS that “Recent history of heap leach operations in Montana, and other western states, suggest that despite all safety precautions taken, a release of contaminants to surface and/or ground waters could occur sometime during the life of the mine.” The respondent suggests “The BLM should review recent history of heap leach operations to see what proportion of those operations experienced release of contaminants, and of those, how many impacted drinking water supplies.” (184)

Response: Heap leach and vat leach operations have occurred at six sites in the Lewistown District on public lands since 1979. Five have experienced cyanide leaks and/or spills which contaminated waters leaving the mine site. Two of these five sites required the replacement of contaminated shallow

alluvial wells with deeper water sources for the local resident's domestic use. The sixth site was abandoned without cyanide neutralization and seven years later, the process ponds are still showing cyanide readings in excess of 1,000 times the state drinking water standard.

H21 Comment: Why the concern over water quality when "most of the water from the seeps and springs in the area is unfit for human consumption." (184)

Response: It is true many of the springs, seeps, and wells at the base of the Sweet Grass Hills are not potable, mainly due to high total dissolved solids. However, they are suitable for wildlife, livestock, and riparian vegetation. These sources need to be protected from human induced degradation so they can maintain their current uses. In addition, preventing human caused degradation means less expense and difficulty treating the water should it be necessary as a potable source in the future.

H22 Comments: The draft does not emphasize potential impacts to water quality from mining or oil and gas activity. (186)

The draft is deficient in ground water discussions, especially potential contamination from oil and gas and mining activities. (57)

"The draft EIS does not sufficiently address the impacts on the area's water resources." (286)

Response: The analysis is based on the reasonable foreseeable development scenarios for locatable minerals and oil and gas contained in Appendices A and B of the draft amendment/EIS. The impacts to water resources are discussed on pages 29 to 31 of draft amendment/EIS.

H23 Comment: "How can the BLM be certain that cyanide leach gold mining will not affect the regions aquifers?" (192)

Response: The draft amendment/EIS does not conclude that ground water would not be affected by mining activities. In fact, it states that given past and recent mining history, it is reasonable to assume a release of contaminants to surface and/or ground waters could occur sometime during the mine's life (page 30 of the draft amendment/EIS).

H24 Comment: BLM should conduct studies to identify critical ground water recharge areas, establish moni-

toring of these areas, and identify areas outside the ACEC that have no potential to impact recharge areas. (200)

Response: The BLM generally requires the applicant of public land use to conduct studies before granting approval of actions that have the potential to disturb existing conditions, including monitoring after the action commences. If mining development were to occur, a plan of operations must be submitted for further environmental review which would include detailed baseline and monitoring.

H25 Comment: "The local Soil Conservation Service is sponsoring a base line water study in the Sweet Grass Hills area at this time. I think it would be wise to wait and see what the results are. The study will be finished in the fall of 1995." (215)

Response: A current hydrologic study is concentrating on water resources of the East Butte portion of the Sweet Grass Hills. The objective of the study is to evaluate the hydrogeology of the East Butte area with respect to all land uses. The study will attempt to delineate areas of discharge and recharge. The Montana Bureau of Mines and Geology (MBMG) is conducting this study with a scheduled completion date of April 1996.

In November 1995 the BLM received a letter from the Liberty County Conservation District stating that preliminary data may be available before March 1996. The BLM was unable to obtain the preliminary information. However, based on the preliminary information, conversations with the MBMG indicate that the area is sensitive to surface disturbing activities such as mining and oil and gas. Any of these activities has the potential to impact the shallow aquifer system surrounding East Butte. This is consistent with the analysis in the amendment/EIS.

The information from the United States Geological Survey (USGS, 1993) on the four aquifer systems in the Sweet Grass Hills was used to evaluate the impacts of the alternatives and provides the necessary information to select a preferred alternative. The additional information specific to East Butte is not essential for a reasoned choice among the alternatives.

This additional information may be useful for evaluating Manhattan Minerals (US) Ltd. pending exploration proposal in the East Butte area once the BLM continues processing of the proposal.

CATEGORY - WILDLIFE

- I1 Comment:** There is no mention in the biological assessment of long-billed curlew, great blue heron, pileated woodpecker, sandhill crane, and several owl species which nest in the Sweet Grass Hills. (29)

Response: The Endangered Species Act, Section 7, requires BLM to prepare a biological assessment of listed threatened and endangered (T&E) species. None of the above mentioned birds are T&E listed species. Avian species that BLM was directed to evaluate included the peregrine falcon and bald eagle.

- I2 Comment:** The commentor questions the Attachment C.4 of Appendix C, paragraph 4 conclusion which states: "The study area neither contains or is close to fisheries that could serve as a food source for bald eagles. Therefore, bald eagles have not established breeding territories in the Sweet Grass Hills nor would they be suspected to ever do so." Respondent claims to have witnessed nesting bald eagles in the study area and believes private stocked fish lakes and adaption to foraging on rodents, afterbirth, and slunk fetuses of livestock are an adequate food source for nesting bald eagles. (29)

Response: The BLM stands by its analysis of the potential of the study area to support a breeding pair of bald eagles based on the food sources available (draft amendment/EIS, page 18). If the respondent has located a bald eagle nest we would like her to report that location to us or the Fish and Wildlife Service at the address given in Attachment C.3. so that the nest can be documented and further studied.

- I3 Comment:** The reported deer density as high as 22 deer per square mile is inaccurate. (56)

Response: This figure was from a helicopter survey conducted by the Montana Department of Fish, Wildlife and Parks on January 15, 1983, when approximately 50 square miles of the Sweet Grass Hills were surveyed and 1,133 mule deer were observed. Obviously, not all deer present are counted. In addition, 31 whitetailed deer and 156 elk were observed.

- I4 Comments:** The commentor asks why only a small portion of the wildlife area is being protected from the significant impacts of high road densities and all the associated environmental impacts. The draft EIS is extremely remiss in not addressing the fragmentation impacts of roads. (57)

"Will oil and gas development contribute to habitat fragmentation?" (192)

Response: The level of oil and gas activity anticipated would not create road densities or road use levels high enough to be of significant impact to the wildlife in the study area. Fragmentation of habitat has not been identified as a problem because of the low level of oil and gas activity and expected use of roads. The Sweet Grass Hills ACEC would be leased with a no surface occupancy stipulation which would preclude road building.

- I5 Comment:** "What are the densities of roads per section and per [oil and gas] exploration site that have resulted from both individual and cumulative exploration activities? How have these activities impacted the landscape as compared to pristine conditions?" (57)

Response: We do not have data on road densities but available information indicates that from January 1932 to November 1993, 66 wells have been drilled within the study area (page 71 of the draft amendment/EIS). The average disturbance per well is estimated at three acres and this includes well pad, road, and associated ancillary facilities (page 27 of the draft amendment/EIS). It is estimated that 60 additional wells could be drilled with 20 of those on Federal minerals. The study area contains 68,605 acres, so about 360 acres would be disturbed from past and future oil and gas activities.

- I6 Comments:** "The draft failed to disclose what mitigation measures will prevent significant impacts to raptors. . . . We believe the draft should provide much more information on mitigation measures for raptors with exploration activities. We would also like to know what the expected effectiveness of such measures will be." (57)

"Are there raptor guidelines for open pit/tunnel/placer mining similar to those for gas and oil production?" (179)

Response: Attachment B.1, page 77 of the draft amendment/EIS, shows the oil and gas lease raptor stipulations. These stipulations mostly provide a timing window when activities are not allowed during critical breeding and nesting seasons of raptors. Since avoidance is the mitigation they are extremely effective. Similar timing windows could be applied to hardrock exploration should an active raptor nest be inventoried in the area of a proposal.

Mitigation for wildlife would be developed when a specific mine plan was analyzed through the environmental review process. Raptor stipulations for oil and gas activities mostly depend on timing restrictions during breeding and nesting seasons. These would be very difficult to apply and still allow mining.

- I7 Comments:** “BLM erroneously and inadequately discusses the existence of limited herds of elk and mule deer....The majority of elk habitat in the East Butte area is outside of the area proposed for withdrawal under the preferred alternative.” (83)

“Radio data on elk herds in the East Butte area indicate that elk do not frequent the area where foreseeable mineral development is likely, and so they would not be affected.” (83)

Response: The draft amendment/EIS discusses data supplied by the MDFWP on deer and elk in the Sweet Grass Hills and relates the importance of Tootsie Creek and Iron Creek (the area of reasonably foreseeable development) (page 17 of the draft amendment/EIS). Both the East Butte and West Butte of the Sweet Grass Hills are important elk habitat and the areas to be withdrawn are equally or more important as habitat depending on the season. Federal surface in the Sweet Grass Hills ACEC is most important as summer and fall habitat and as escape areas during hunting season as they are the highest and most inaccessible areas. The most common big game animal in the Sweet Grass Hills is mule deer with recorded densities as high as 22 deer per square mile.

- I8 Comment:** “BLM improperly considers issues relating to the reintroduction of endangered and threatened species in the area.” (83)

Response: All Federal land management agencies participate in the recovery of endangered species. Reintroduction is one method of recovery (ESA, Sec. 2 & Sec. 3). Section 7(4)(c) of the ESA states, “request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action” and “such agency shall conduct a biological assessment for the purpose of identifying any endangered species or threatened species which is likely to be affected by such action.” In order to comply with the ESA, the BLM requested a threatened species list (ESA, Section 7(4)(c)(1)) from the Fish and Wildlife Service and were given three species to consider in the amendment/EIS (draft amendment/EIS, Attach-

ment C.3, pages 86 and 87). The BLM is required to conduct a biological assessment to determine whether or not the proposal “may effect” these species (ESA, Section 7(4)(c), and Section 402.14, 50CFR, part 402, June 3, 1986). BLM’s finding were that the preferred alternative would not affect these three listed species (Attachment C.4, page 88). Therefore, the BLM did not initiate formal consultation.

The BLM recognized the importance of the area for recovery of the peregrine falcon during designation of the Sweet Grass Hills ACEC. The Sweet Grass Hills are an important location for future hack sites. The BLM has never intended to reintroduce black-footed ferrets to the area.

- I9 Comment:** “The wildlife section has no reference to the few moose which have ventured into the upper parts of Breed Creek.” (179)

Response: This is the first report received by BLM of moose in the Sweet Grass Hills. Through resource monitoring it will be interesting to determine whether or not they establish residence in the area in the future.

- I10 Comment:** “I have spoken with three families about bald eagle sightings...The EIS mentions that they *may occur* this should be changed to they *do occur*.” (179)

Response: Bald eagles do occur as spring migrates but we have no documented nest sightings. Nesting pairs would be of greatest concern from impacting activities, such as mining.

- I11 Comment:** “The Draft EIS only cursorily discusses impacts to wildlife, particularly big game. No maps are provided to show critical big game habitat and the various seasons of use in relation to the four issues/activities of the various alternatives.” (186)

Response: The Sweet Grass Hills do not lend themselves to long migrations from summer range to winter range such as is typical of other mountainous deer and elk herds. Most of the Sweet Grass Hills are important to deer and elk during all seasons. The discussion provided on page 17 of the draft amendment/EIS provides the information necessary to understand the effects of the alternatives.

CATEGORY - RECREATION

- J1 Comment:** “The BLM consult with an advisory

board” consisting of various public land users before the off-road vehicle (ORV) issue is settled. (8, 9, 11, 23, 26, 27, 32, 34, 37, 64, 90, 94, 95, 96, 97, 98, 99 & 100)

Response: The BLM has talked with several interest groups and individuals over the years about the management of motorized vehicles in the Sweet Grass Hills. This coordination is what led to the Emergency Road Closure in 1989. A steering committee for the Sweet Grass Hills was utilized in 1991 to gather additional information about the management of ORVs in the area. The analysis of the public input from these sources, as well as scoping for the amendment/EIS, resulted in the recommendation for ORV use in Alternative C of the draft amendment/EIS.

J2 Comment: “Agency personnel and lessees would have the right to use ORVs in the process of their business.” (8, 9, 11, 23, 26, 27, 32, 34, 37, 64, 90, 94, 95, 96, 97, 98, 99 & 100)

Response: This is in conformance with BLM regulations (43CFR8340.0-5h) which allows the use of ORVs for certain reasons in an area designated as “Closed” but only with the approval of the authorized officer, in this case the Area Manager.

J3 Comment: The commentor asks for the control of knapweed infestations in association with the use of ORVs in the area. (8, 9, 11, 23, 26, 27, 32, 34, 37, 64, 90, 94, 95, 96, 97, 98, 99 & 100)

Response: With the closure of the Sweet Grass Hills to motorized vehicle use, stipulations can be added to any subsequent ORV permit when it is approved by the Area Manager that would address the noxious plant issue. The BLM also has a brochure titled “NOXIOUS WEEDS, A Growing Concern” that is available for public distribution that highlights proper procedures to follow in helping to control the spread of these infestations.

CATEGORY - LANDS

K1 Comment: “There should be [a] transfer of the quarry from the Bureau of Reclamation to the Bureau of Land Management.” (19)

Response: Part of the Bureau of Reclamation withdrawal (532 acres) has been recommended for termination in a withdrawal review effort (May 1993) since the withdrawal is no longer serving the purpose

for which it was withdrawn. The remaining 40 acres was recommended for a 20 year term modification (May 1993) since it is serving the purpose for which it was withdrawn by providing for a current and future riprap quarry for Tiber reservoir. However, under the preferred alternative the 40 acres would be recommended for termination since the continued use of the riprap quarry would be incompatible with the resource values being protected by the proposed withdrawal.

K2 Comment: The comments state that the BLM needs to pursue an exchange with the State of Montana to consolidate ownership which will lead to better protection of the Sweet Grass Hills using for trade BLM lands outside the Sweet Grass Hills area. The BLM should work with the state on acquiring all state lands within the SHPO’s National Historic District nomination boundary. (39, 48, 57, 67, 69, 74, 76, 78, 79, 85, 88 & 135)

Response: The BLM would consider any reasonable land exchange proposed by the State of Montana that would protect the integrity of the Sweet Grass Hills ACEC.

The SHPO’s National Historic District boundary is a proposal, not a recognized boundary by the Keeper of the National Register. The final officially recognized boundary may be different.

K3 Comment: The “phrase public interest determination seems vague and should be defined.” (179)

Response: When considering public interest, the BLM would give consideration to better Federal land management and the needs of State and local people along with the public objectives that would be served. Under the preferred alternative all acquisitions of lands (surface and/or subsurface) would depend on a willing seller.

K4 Comment: “Would mining activities that do not include locatable mineral entry be allowed on withdrawn lands?” (192)

Response: Should a mining claim be totally surrounded by Federal land, then the mining claimant would, of necessity, have a right of reasonable access for roads and utility lines to operate and maintain the improvements. These activities require a right-of-way and are subject to the National Environmental Policy Act.

For additional information please refer to response E17.

K5 Comment: BLM “should recommend at least a 50 year withdrawal of all minerals on federal lands in the Sweetgrass Hills.” (292)

Response: For withdrawals aggregating 5,000 acres or more the BLM can only recommend a term of up to 20 years. Under section 204(c)(1) of the Federal Land Policy and Management Act “a withdrawal aggregating five thousand acres or more may be made . . . only for a period of not more than twenty years.”

CATEGORY - CULTURAL RESOURCES

L1 Comment: “BLM needs to accomplish several information gathering tasks before consultation leading to informed decisions regarding the management of historic properties in the Sweet Grass Hills can proceed . . . for NEPA planning purposes as well as Section 106.” (7)

Response: The BLM has completed the Section 106 process for a 19,765 acre withdrawal. The results of the process are included in Appendix C of the final amendment/EIS.

L2 Comment: The “Councils regulations are inaccurately referenced as 36CFR63.3 rather than 36CFR800.” (7)

Response: The correct reference is 36CFR63.3, however this section was not included in the final amendment/EIS.

L3 Comments: “The Sweet Grass Hills should be designated on the National Register of Historic Places.” (19)

“There is no mention of impact on personal property rights on the thousands of acres encompassed in the SHPO boundary” (historic district). (43)

“As for the study area size, I do not like what the Montana State Historic Preservation [Office] did in the size of the area, they said after the Nov. 1991 public meeting, that the listing of the Sweet Grass Hills would be dropped as listing requires the consent of majority of landowners which it didn’t have, so that boundary should not have been used in this Draft.” (183)

Response: Listing properties on the National Register is beyond the scope of the amendment/EIS. As addressed on page 5 of the draft amendment/EIS, “While establishment of a National Register His-

toric District is an issue in the Sweet Grass Hills study area, this amendment and environmental impact statement (EIS) is not the process or method for resolution of this issue. Final determination on a Historic District must be made by the Keeper of the National Register of the National Park Service.”

L4 Comment: “The draft EIS fails to adequately consider how mining activities could be compatible with the Montana State Historic Preservation Office’s nomination of the Sweet Grass Hills as a National Register of Historic Places District.” (21)

Response: The Sweet Grass Hills have never been formally nominated to the National Register. Further, listing a property on the National Register does not in itself preclude mining or any other use of the property.

L5 Comment: “Devil’s Chimney is either just in, but seems to be just out” of the Sweet Grass Hills ACEC. (35)

Response: Devil’s Chimney is within the Sweet Grass Hills ACEC on Federal surface over private minerals.

L6 Comment: “Among the discrepancies I noted was elusion to harvesting plants and roots for medicinal and ceremonial usages. A complete void with the exception of the mention of sweet grass used in ceremonial and bartering occasions. What a travesty. . . . - a infinitesimal accounting of magical flora which exists in the Sweet Grass Hills.” (56)

Response: The amendment/EIS has been revised to reflect a variety of plants in the Sweet Grass Hills. The unique geography of the hills made them an important source of a variety of medicinal plants, including sweetgrass (*Hierochloe odorata*), otherwise not locally available on the extensive plains.

L7 Comment: The “Amendment [does not] address impacts of oil and gas exploration on Native American cultural or spiritual concerns.” (83)

Response: The impacts to cultural resources, including Native American cultural and spiritual sites, from oil and gas exploration are addressed in Chapter 4 of the draft amendment/EIS (pages 32, 37, 41, and 43).

L8 Comment: “Comment is made in the Amendment/EIS that ‘past reclamation of mineral exploration has apparently buried’ traditional paints and medicines gathered by the Chippewa Cree on East Butte.

Amendment/EIS at 23. This has not been verified. Nor is there any indication that if some disturbance has in fact occurred it has had any adverse impact on the availability of these traditional plants which are disbursed throughout the Hills.” (83)

The document implies that mineral exploration and mining would lead to the destruction of spiritual resources such as sweet grass, “paints” and “medicines” by its reference to the “apparent” burying of such materials during reclamation. The implied significance of this impact is not balanced by any statement of how widespread the sweet grass, “paints” or “medicines” are or their range of occurrence in relation to the areas impacted by mineral exploration and mining. (184)

Response: The referenced statement in the draft amendment/EIS discusses concerns expressed by both the Blackfoot and the Chippewa-Cree about traditional “paints” and “medicines.” It has not been verified that past reclamation has buried such materials. This has been clarified in the text of the final amendment/EIS. However, the traditional paints and medicines referenced are derived from mineral resources, such as fluorite crystals, not plants.

L9 Comment: “The BLM ignores existing studies on the actual cultural resources of the Sweet Grass Hills.” The respondent specifically mentions the West HiLine RMP/EIS, Royal East Joint Venture EIS, and a BLM Class III cultural inventory. (83)

Response: The cultural resources described in the draft amendment/EIS is based on available information, including the data used for the West HiLine RMP/EIS and the Royal East Joint Venture EIS (pages 19 to 23 of the draft amendment/EIS). The references are noted in the draft amendment/EIS.

L10 Comment: “BLM has failed to provide any mapping of recorded or inventoried archaeological sites and instead hides behind vague assertions about the existence of such sites. Since the question of the existence of Native American cultural sites is essential to a complete understanding of the impact that management decisions contained in the Amendment/EIS and its purported effort to protect these sites, vague statements such as made in the Amendment/EIS are of little demonstrative value.” (83)

Response: The Archaeological Resources Protection Act and the 1992 Amendments to the National Historic Preservation Act prohibit public disclosure of cultural site locations (mapping). Further, since it

is the Sweet Grass Hills themselves which are considered culturally and historically important, the location of individual “sites” within the study area is not particularly important for the amendment/EIS.

L11 Comment: “BLM fails to adequately detail the history of Native American occupation of the area of the Sweet Grass Hills. . . . The lands have been open for settlement and location by the public since 1888. The Gros Ventres and Blackfeet received payment for the ceded lands through the Indian Claims Commission See Blackfeet et al Nations v. U.S. 81 C.Ct. 101 (1935). Subsequent claims for payment for these lands were brought in the 1950’s. See Indian Claims Commission Docket 279 (195-). In 1968 the Blackfeet and the Gros Ventre tribes received \$8,679,814.92 as additional compensation for ceding these lands to the United States.” (83)

Response: The draft amendment/EIS, pages 19 and 20, adequately describes the historic use of the Sweet Grass Hills to understand the effects of the alternatives.

L12 Comment: “BLM fails to note that other uses have consistently been pursued in the Hills and does not address why these other uses have not affected the so-called ‘spirituality’ of the Hills.” The respondent specifically mentions: Reclamation’s rip rap quarry; communication sites; previous prospecting, exploration, and mining; hunting and recreation; and livestock grazing. (83)

Response: As discussed on page 4 of the draft amendment/EIS, “Several management concerns were considered, during the initial scoping process, but were concerns which can be resolved with existing management guidance or are beyond the scope of this document and are not considered issues in this amendment. These management concerns included; rights-of-way [including communication sites], National Historic District, recreation, livestock grazing, and access.” This management guidance and environmental consequences was addressed in the West HiLine RMP/EIS. Previous exploration was addressed in the Santa Fe Pacific Mining EA (1986) and Cominco American Resources EA (1989).

L13 Comment: “No specific sites, other than Devil’s Chimney Cave, have been identified by BLM or the relevant tribes in the area designated for withdrawal. Much of the evidence referred to in this Amendment/EIS is located on areas outside the proposed withdrawal and therefore would not be protected by the withdrawal. Heavy BLM reliance on vague asser-

tions about the “spirituality” of the Hills is not supported by the evidence.” (83)

Response: The Archaeological Resources Protection Act and the 1992 Amendments to the National Historic Preservation Act prohibit public disclosure of cultural site locations (mapping). Further, since it is the Sweet Grass Hills themselves which are considered culturally and historically important, the location of individual “sites” within the study area is not particularly important for the amendment/EIS. The BLM has received formal affirmations of the significance of the Sweet Grass Hills from the Blackfeet, Flathead and Rocky Boy Reservations tribal governments. In addition, representatives of the Assiniboine, Blackfoot, Chippewa-Cree, Gros Ventre (Atsina), Kootenai, and Salish have all expressed concern about preserving the sacredness of the Sweet Grass Hills (page 22 of the draft amendment/EIS). Additionally, it is obviously beyond the scope of BLM’s land use plan to consider management of resources outside of BLM’s jurisdiction. Nonetheless, it is appropriate for BLM to develop management guidance for those resources under its jurisdiction which conform to public expectations as expressed during scoping.

L14 Comments: Any elimination of legal use of the public lands (including mining) for the purpose of protecting religious practices of any group, including Native Americans, is a clear violation of the First Amendment’s establishment clause. (83)

“The ‘traditional spiritual’ values of Native Americans would not be any more adequately protected under the three alternative management options than they are under current management practices. This is because mineral development and other uses can still occur on private lands and on valid existing mining claims. Under current management practices, cultural values must be considered and mitigated where practicable. However, something more than vague assertions of the area’s spirituality is necessary. In any event, to protect these rights by depriving other members of the public legitimate use of these lands is unjust and is a violation of the First Amendment’s establishment clause.” (83)

Response: The American Indian Religious Freedom Act states that “it shall be the policy of the United States to protect and preserve for the American Indian, Eskimo, Aleut, and Native Hawaiian the inherent right of freedom to believe, express, and exercise their traditional religions, including but not limited to access to religious sites, use and posses-

sion of sacred objects, and freedom to worship through ceremonies and traditional rites.” The Religious Freedom Restoration Act of 1993 states “Government may substantially burden a person’s exercise of religion only if it demonstrates that application of the burden to the person—

(1) is in furtherance of a compelling government interest; and

(2) is the least restrictive means of furthering that compelling government interest.”

In conformance with these requirements and the West HiLine ROD (1992), only those uses of public land which are incompatible with preservation of the ACEC values are being considered. Exclusive use for religious purposes by any group is not being considered.

L15 Comment: The commentor draws “BLM’s attention to ‘Executive Order No. 12898 on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.’ . . . The EPA’s guidance on this Executive Order indicates that among the factors that should be considered are impacts or possible violation of a community’s customs or religious practices, and impacts to cultural and/or historic properties and areas.” (161)

Response: Cultural resources, including prehistoric sites, historic use, and spiritual use are described under “Cultural Resources” in Chapter 3 of the draft amendment/EIS. The impacts to traditional Native American spiritual practices and cultural sites is addressed for each alternative under “Impacts to Cultural Resources” in Chapter 4.

L16 Comment: “Since the three buttes of the Sweet Grass Hills comprise a Traditional Cultural District eligible for the National Register, BLM must assess the effects their proposed withdrawal under Alternative C has on the entire Historic District, just not individual sites which, combined, make up the District.” (172)

Response: The amendment/EIS addresses the potential impacts to the proposed historic district, which encompasses the three buttes in the Sweet Grass Hills. The environmental consequences, Chapter 4, describes the impacts from the proposed withdrawal and reasonably foreseeable future actions for assessing cumulative impacts. The reasonable foreseeable development for locatable minerals

would most likely occur in the Tootsie Creek are of East Butte (page 27 of the draft amendment/EIS). Under Alternative A, “Adverse impacts to the proposed historic district as well as possibly unmitigateable impacts to traditional Native American spiritual practices in Tootsie Creek basin would be reasonably foreseeable” (page 33 of the draft amendment/EIS). Under Alternative C, “If valid claims are located within the ACEC or mining activity occurs on private minerals, the potential impacts would be the same as those discussed in Alternative A” (page 41 of the draft amendment/EIS).

- L17 Comment:** “The BLM has not adequately considered how Alternative C will impact traditional religious practices or sites. Nor has the BLM adequately considered how a limited withdrawal of the federal mineral estate will impact or infringe on American Indian religious practices in the Sweetgrass Hills.” (172)

Response: Under Alternative C, “If valid claims are located within the ACEC or mining activity occurs on private minerals, the potential impacts would be the same as those discussed in Alternative A” (page 41 of the draft amendment/EIS). Locatable mineral exploration or development (or oil and gas) have the potential to negatively impact traditional Native American spiritual practices and sites (pages 32 and 33 of the draft amendment/EIS). The amendment/EIS indicates that the degree of impact would be related to the specifics of the action. The amendment/EIS analyzes various sizes of withdrawal through the use of a range of alternatives. For example, Alternative B addresses a 19,765 acre withdrawal and Alternative A contains no withdrawal.

- L18 Comments:** “The BLM’s preferred Alternative C does not meet the First Amendment compelling state interest test or the requirements of the least restrictive means of the free exercise clause. The BLM has failed to demonstrate how withdrawal of only a limited portion of federal mineral estate in the study area furthers a compelling government interest and how this was planned in the least restrictive manner possible to avoid interference with traditional religious practices.” (172)

“A failure by the BLM to withdraw all federal mineral from mining entry could violate both the American Indian Religious Freedom Act and the free exercise clause of the First Amendment to the United States Constitution. The BLM’s preferred alternative C does not satisfy the First Amendment’s

compelling government interest test or the requirements of least restrictive means of the free exercise clause.” (175)

Response: The preferred alternative has been modified to withdraw all Federal minerals from locatable mineral entry. The “compelling state interest test” and the “least restrictive means test” are relevant to government actions, not inactions. The potential government action is a withdrawal from mineral entry. The BLM is not aware of any person whose religious practice would be burdened by a withdrawal of this area.

- L19 Comment:** “The BLM utterly fails to show how its trust responsibility to Tribes is fulfilled by its preferred Alternative C.” (172)

“The Chippewa Cree Tribe strongly urges the BLM to adhere to President Clinton’s Presidential Memo dated April 29, 1994 which mandates that federal agencies work with Indian Tribes on a true government-to-government basis in fulfilling the United States Governments’ trust responsibility to Indian Tribes.” (203)

Response: The BLM must honor its trust responsibility to Native Americans as well as protecting the public lands from undue or unnecessary degradation. No trust resources, such as trust lands, minerals, or other resources that a Tribe or individual has a legal interest in, have been identified in the project area, nor would any trust resources be significantly impacted by the actions proposed in the preferred alternative. Other Native American issues not specifically related to our trust responsibility have been addressed in both the draft and final amendment/EIS. These issues are specifically addressed in the sections on Cultural Resources in Chapters 3 and 4.

- L20 Comment:** “The Amendment/EIS fails to adequately explain how its preferred alternative — which would release 12,000 acres to potential mining claims — protects the historic and cultural values associated with the Hills as required by the National Historic Preservation Act (‘NHPA’).” (175)

Response: The preferred alternative in the draft amendment/EIS has been modified. Under the final amendment/EIS, the BLM would file a petition with the Secretary of the Interior requesting that the Federal minerals in the Sweet Grass Hills study area (19,765 acres) be withdrawn from locatable mineral entry for a 20-year term. However, it is important to

clarify that Alternative C in the draft amendment/EIS would not “release” any acreage to mineral entry since those lands have never been withdrawn. The segregation only prevented additional claims on those lands for two years to preserve existing conditions until the land use plan could be re-evaluated and a recommendation by the BLM to the Secretary concerning a withdrawal for the Sweet Grass Hills.

- L21 Comment:** “If the cultural resources were not significant to local land owners in 1991, how can the BLM state that they are significant in 1995, especially if no on-the-ground inventory has been done?” (184)

Response: Federal agencies are required by Section 106 of the National Historic Preservation Act to identify properties eligible to the National Register which might be affected by an agency decision regardless of land ownership. As explained on page 21 of the draft amendment/EIS, this was done as part of the analysis of the proposed mineral exploration on East Butte. The Sweet Grass Hills are considered a traditional cultural property historic district. These properties are addressed in National Register Bulletin #38. Landowner approval is needed if a property is to be “listed” on the National Register, but not for an agency determination of eligibility for the purpose of Section 106 compliance.

For additional information please refer to response L3.

- L22 Comment:** “The document does not state whether Native Americans actually living in the area consider the Sweet Grass Hills to be of spiritual significance.” (184)

Response: The BLM has received formal affirmations of the significance of the Sweet Grass Hills from the Blackfeet, Flathead and Rocky Boy Reservations tribal governments. In addition, representatives of the Assiniboine, Blackfoot, Chippewa-Cree, Gros Ventre (Atsina), Kootenai, and Salish have all expressed concern about preserving the sacredness of the Sweet Grass Hills (page 22 of the draft amendment/EIS).

- L23 Comment:** “If cultural resources are taken to mean something different from Native American religious practices, this discussion is lacking in that other cultural resources endemic to the Sweet Grass Hills are not discussed or considered. For example, there is a wide array of non-Native American cultural resources represented by the Sweet Grass Hills, not

the least of which includes historic and modern cultures involving mineral exploration and development, as evidenced by BLM’s own cultural inventories.” (83)

Response: Historic use of the area during the last 100 years includes ranching, farming and mining as well as historic use by Native Americans for religious purposes such as gathering sacred materials and vision questing. Historic mining is discussed under cultural resources in Chapter 3 of the amendment/EIS. The economic and social conditions of the area including farming, ranching and recent mineral exploration is also discussed in Chapter 3. However, because of the relative importance of the Native American cultural issues as reflected by public comment, emphasis of the analysis on this issue is necessary to understand the effects of the alternatives.

- L24 Comment:** “The preferred alternative in the Draft Amendment is not consistent with BLM’s substantive stewardship responsibilities under FLPMA and Section 110 of the NHPA.” (187)

Response: The draft amendment/EIS is consistent and follows all applicable laws and regulations. The preferred alternative, in the final amendment/EIS, has been modified to withdraw all Federal minerals in the study area from locatable mineral entry and all BLM lands would be retained under BLM administration.

- L25 Comment:** The commentor objects to inclusion of certain private property within a Sweet Grass Hills Historic District. (319)

Response: Resolution of the boundaries of the Sweet Grass Hills historic district is beyond the scope of the amendment/EIS.

- L26 Comment:** “The DEIS fails to adequately address a number of concerns expressed by Native people including the effect of the preferred alternative on religious and traditional activities, physical intrusion on the land, Devil’s Chimney Cave, and herbs and medicinal plants.” (186)

Response: Current spiritual use and American Indian Religious Freedom Act concerns are discussed in Chapter 3 of the amendment/EIS with the impacts of the alternatives identified in Chapter 4. The amendment/EIS has been revised to include the conclusion that exploration and development of locatable minerals “could negatively impact Devil’s Chimney

Cave, and traditional Native American 'paint' collecting areas as well as traditional practices associated with Tootsie Creek."

For additional information please refer to responses L6, L8, and L17.

CATEGORY - SOCIAL and ECONOMIC CONDITIONS

M1 Comment: "BLM fails to analyze the cultural values of non-Native Americans represented by the Sweet Grass Hills." The respondent specifically mentions the "culture of mineral and oil and gas development" and the "exodus of local people from the area as a result of the poor economic climate." (83)

Response: The social and economic conditions of the study area are described in the draft amendment/EIS including the decline in population and changes in oil and gas activity (pages 23 to 25 of the draft amendment/EIS).

M2 Comment: "BLM fails to note that . . . There are essentially no Native Americans living in either of the two counties adjacent to the Sweet Grass Hills (Liberty and Toole Counties) and that the closest Native American populations are over 60 miles away." (83)

Response: The number of Native Americans living in Liberty and Toole Counties is discussed on page 23 of the draft amendment/EIS. The importance of this area to Native Americans is discussed on page 19 of the draft amendment/EIS.

M3 Comment: "The Amendment/EIS fails to point out that mineral exploration and development would halt the decline in population in these counties and would provide additional revenue to improve basic services." (83)

Response: The draft amendment/EIS discusses the impacts from possible mineral exploration and development. As stated on page 33 of the draft amendment/EIS "Hardrock mining development could also provide additional local employment and could reverse historic out migration trends. The numbers and types of local businesses could also increase, enhancing the social well-being of residents."

M4 Comments: "BLM fails to note the actual economic impact of recent mineral exploration on the local

economy. . . . BLM also failed to note that recent exploration activity and associated spending activity has contributed an estimated seven jobs annually." (83)

"BLM deliberately underestimates the economic impact of exploration in the area. Approximately \$2 million was spent in the area between 1983 and 1990, most during a four year period. An estimated seven jobs were created through this small scale exploration. A discussion of the economic impact of recent exploration is contained in the Royal East EIS." (83)

Response: The previous exploration activity was noted on page 34 of the draft amendment/EIS, and the estimated annual expenditures were the basis for the projected economic impacts. The difference in the estimates of the number of jobs created was the result of applying the employment multipliers to 100 percent of the expenditures in this analysis versus 50 percent in the Royal East Joint Venture EIS. The amendment/EIS has been revised to indicate that "The exploration activity could support up to nine jobs annually, consisting of up to five individuals during the field season and up to four jobs supported by spending activity." The economic section in the affected environment, Chapter 3, has also been updated to include information on previous exploration activity.

M5 Comment: "BLM fails to clearly state that if mining operations were commenced under the current management alternative, the social implications would be by a large measure more favorable than negative." (83)

Response: Mining operations could cause a variety of effects to the social environment. These effects are discussed in general on page 33 of the draft amendment/EIS. The specific effects would depend upon many factors including community leadership, community service and infrastructure capacity, timing of development, and the number and types of nonlocal employees hired.

M6 Comment: There "is no substantive discussion of the long term negative effects of mining on the quality of life of residents." (136)

"Alternative C fails to consider the cumulative effects and impact on the quality of life for the people in and around the Sweet Grass Hills." (77)

Response: Mining operations could cause a variety of effects to the social environment. The implications and potential effects are discussed on page 33 of the draft amendment/EIS. This analysis, including cumulative impacts, is based on the reasonable foreseeable development scenario for locatable minerals contained in Appendix A of the draft amendment/EIS. As discussed in the draft amendment/EIS, effects to social organization could be experienced if newcomers to the area were different in attitudes and values from existing residents. The specific effects to social well being or quality of life would depend upon many factors including community leadership, community service and infrastructure capacity, timing of development, and the number and types of nonlocal employees hired. Further environmental assessment would be completed if and when a mine plan of operations is received by BLM.

- M7 Comment:** “The Draft should also adequately address the economic and social effects of denying and allowing mining of a mineralized deposit within the boundaries of the Claims.” (173)

Response: The social and economic impacts based on the hypothetical mining scenarios are addressed in the draft amendment/EIS, including potential changes in employment, population, income, and tax revenues. The following statement has been added to the Impacts to Social Conditions, Alternative B, under “From Locatable Mineral Development”; ongoing population out-migration trends would probably continue in the area.

- M8 Comment:** “On page 24 the decline in number of jobs is attributed to the decline in population, yet on page 23 it states (correctly) that people move out of the area to find jobs.” (184)

Response: The statements referenced in the draft amendment/EIS are correct. People do move out of the area to find jobs. When enough people leave the area, the demand for local retail trade and services declines. As a result, jobs are lost in those areas. Therefore, the decline in the number of jobs is due to the decline in population.

- M9 Comment:** “The DEIS fails to examine the potentially adverse economic effects of these [mine] development activities associated with the areas’s infrastructure.” (186)

Response: Effects to the area’s infrastructure and public services are discussed in general on page 33 of the draft amendment/EIS. Specific impacts would

depend upon community service and infrastructure capacity, timing of development, and the number and types of nonlocal employees hired. Further environmental analysis would be completed if and when a mine plan of operations is received by the BLM.

CATEGORY - PUBLIC INVOLVEMENT

- N1 Comments:** “This Amendment/EIS completely ignores documented public support for mineral development in the Sweet Grass Hills. The Amendment/EIS states that there is ‘virtually no support’ for mineral development in the Sweet Grass Hills.” (83)

“BLM fails to point out support for local development.” (83)

Response: Public land management processes, including plan amendment decisions, are not intended to be resolved through a voting process. However, support for and opposition to hardrock exploration and mining is expressed at public meetings and in comment letters received by the BLM.

As stated on page 3 of the draft amendment/EIS, “During these public meetings [Draft Royal East Joint Venture EIS] it became apparent that protection of the areas traditional spiritual importance to Native Americans and aquifers in the East Butte area that supply potable water to local residents, and are recharged in the Sweet grass Hills, were the two values of primary importance. There was virtually no public support extended toward Manhattan’s proposal.” The statement reflects the public comments expressed and received during those meetings. To clarify the public comments on the amendment/EIS a summary of the comments received during scoping and on the draft amendment/EIS is included in Chapter 5 of the final amendment/EIS.

- N2 Comment:** “Please provide me with a summary of all comments regarding mining in the Hills.” (159)

Response: Chapter 5 of the final amendment/EIS includes a summary of the comments received on the draft amendment/EIS. Also included in this chapter are specific comments that require a response or revision to the document. The comment letters are available for review at the Great Falls Resource Area Office, 812 14th Street North, Great Falls, Montana 59403. Requests for copies of the comments should be addressed to the Resource Area Office.

N3 Comments: “Public opposition to exploration and heap leach mining in the Sweet Grass Hills has been tremendous” and “The staff of the local Montana BLM offices have not been responsive to what the public has said, and consequently has selected ‘Alternative C’ as its preferred alternative.” (272)

“The alternative faces considerable local, statewide, and nationwide opposition, and BLM should give great consideration to public input.” (276)

Response: All comments, written and oral, were reviewed and considered. Comments that presented new data, questioned facts or analysis, or raised questions or issues bearing directly upon the alternatives or environmental analysis were responded to in the final amendment/EIS. Comments expressing personal opinions were considered but not responded to directly. The preferred alternative has been revised requesting that all the Federal minerals in the Sweet Grass Hills study area (19,765 acres) be withdrawn from locatable mineral entry for a 20-year term.

SUMMARY OF PUBLIC MEETINGS

The questions and comment received during the public meetings on the draft amendment/EIS are summarized in this section and are just that — summaries. They are not exact quotes, but were prepared by the BLM based on the notes and transcripts from the public meetings. Following each question or comment is a reference to the “Comments and Responses on the Draft Amendment/EIS” (i.e. A3, B1) or the response.

Public Meeting - Shelby, Montana

Comment: Under Alternative C, could the mining claimant still go in and mine?

Response: Please refer to responses C2 and C5.

Comment: What started the process for the withdrawal?

Response: Please refer to response A2.

Comment: It’s not necessary to use heap leach mining to extract minerals.

Response: Please refer to responses E6, E8, E11, and E21.

Comment: The current two year withdrawal is not legal and it would certainly be illegal to extend the withdrawal.

Response: Please refer to response A5.

Comment: Why did you take out the 40 acre rock quarry?

Response: Please refer to response K1.

Comment: Is gravel covered under the 1872 Mining Law?

Response: No, gravel is a mineral material covered under the Mineral Materials Act of 1947 and is considered saleable material.

Comment: What would be a reason for condemning property that Congress would have to validate?

Response: Please refer to responses C5 and C12.

Comment: How’s the process going on the validity exams?

Response: Please refer to response E14.

Public Meeting - Browning, Montana

Comment: What mining company is trying to get into the area?

Response: In February 1992, the BLM and Montana Department of State Lands received a proposal from Manhattan Minerals (US) Ltd. to conduct exploration activity in the Tootsie Creek drainage of East Butte. In August 1993, the BLM suspended processing of this exploration proposal in order to complete a validity examination on the existing claims and involve all interested publics in a resource management plan amendment process.

Comment: Are the mining claims patented?

Response: The 20 mining claims on Federal mineral estate in the Sweet Grass Hills are not patented (6 claims on Middle Butte and 14 claims on East Butte). Some of the private minerals in West and East Buttes are patented mining claims.

Comment: Is the area of drilling and trenching on BLM or private land? Breakdown the percentage of private and BLM land.

Response: The proposal submitted by Manhattan Minerals (US) Ltd. was to construct approximately

26,300 feet of access road/trench with 38 in-road drill sites in the Tootsie Creek area of East Butte. An additional 1,500 feet of road construction for access purposes was also proposed. Approximately 21,200 feet would be on BLM land and 6,600 feet on private land. In August 1993, the BLM suspended processing of this exploration proposal in order to complete a validity examination on the existing claims and involve all interested publics in a resource management plan amendment process. For additional information please refer to response A9.

Comment: Is oil and gas leasing going on in the Sweet Grass Hills?

Response: Presently 13,156 acres of Federal minerals out of a total of 21,409 acres within the study area are leased for oil and gas (page 28 of the draft amendment/EIS).

Comment: Could there be a mine on areas with private minerals and federal surface?

Response: A withdrawal would only apply to Federal minerals (subsurface) subject to valid existing rights. Exploration and/or mining could occur on Federal surface/private minerals (1,252 acres).

Comment: How do you establish that an area as high value minerals? Have they (the mining claimant) shown you an analysis of the minerals?

Response: Please refer to responses E9 and E10.

Comment: When did they get this land from the Blackfeet and was compensation made for the minerals?

Response: The Sweet Grass Hills were part of the Indian Reservation created by the Treaty of 1885. The Sweet Grass Hills were included in the ceded area of the 1887 agreement which was ratified by Congress in 1888. The ceded lands were open to the public after May 1, 1888. Minerals were conveyed with the surface estate.

Comment: Could Lehmann go in and mine under Alternative C?

Response: Yes, please refer to responses C2 and C5.

Comment: How would we treat valid claims under all alternatives?

Response: The proposed withdrawal would be subject to valid existing rights (valid claims). Under

Alternatives B and D, the BLM would discourage further exploration or mine development on any valid claims. The BLM would pursue relinquishment of valid claims through purchase, exchange, condemnation, or conservation easements from private sources. The purchase or condemnation of valid claims would require Congressional approval. Under the preferred alternative, Alternative C, the BLM would encourage holders of valid claims to relinquish their claims through purchase, exchange, or through conservation easements from private sources. All acquisitions would be on a willing seller basis.

Comment: Are you familiar with trust responsibility and does it only extend to land?

Response: Please refer to response L19.

Comment: When will the alternative come into effect?

Response: The final amendment/EIS is released to the public with a 30-day protest period. The BLM may issue a Record of Decision 30 days after release of the final amendment/EIS approving implementation of any portions of the proposed plan amendment not under protest. Approval would be withheld on any portion of the plan amendment under protest until the protest has been resolved. The BLM would begin processing the withdrawal after the Record of Decision.

Comment: If there is a mine, will they be allowed to use land which is withdrawn for waste dumps and access?

Response: Please refer to response E17.

Comment: I would say that one other alternative should be considered: The U.S. sets aside this land for spiritual reasons and the Sweet Grass Hills be declared a national spiritual treasure and forget about mineral extraction.

Response: Please refer to response L3.

Public Meeting - Chester, Montana

Comment: What is the purpose of the EA?

Response: The purpose and need for the amendment/EA (May, 1995) was the time gap between the end of the 2-year segregation (August 2, 1995) and completion of the West HiLine RMP amendment/EIS (scheduled for February 1996) and the public's desire to avoid additional claim location, exploration, and possible cyanide heap leach mining in the

Sweet Grass Hills. Without completing the amendment/EA and the proposed withdrawal, the Sweet Grass Hills would reopen to mining claim location.

The amendment/EA was released to the public on May 11, 1995 for a 30 day protest period ending on June 16, 1995. The BLM received a protest on the amendment/EA on June 14, 1995. Based on a review of the amendment/EA, the BLM Director determined that the EA was not sufficient to support the Montana State Director's decision, because it did not consider all relevant alternatives and the agency was analyzing long term management strategies in an ongoing EIS. Accordingly, the Director overruled the State Director's decision and the protest was declared to be moot and dismissed.

In July 1995, Congressman Pat Williams introduced legislation to protect the Sweet Grass Hills (H.R. 2074). In aid of that legislation, Assistant Secretary Armstrong, on July 24, 1995, approved a petition to file an application withdrawing the lands from location and entry under the mining laws. Notice of this action appeared in the Federal Register edition of July 28, 1995. Consequently, subject to valid existing rights, the Sweet Grass Hills were segregated from location under the mining laws for a period of up to two years, while the application for the proposed withdrawal in aid of legislation is being processed.

Comment: Is the EIS and EA addressing the same time period for the withdrawal?

Response: Yes, both address a 20 year term withdrawal.

Comment: The EA recommends 19,000 acres for withdrawal. It would make more sense for the EA and the EIS to have the same acreage for the withdrawal.

Response: The preferred alternative has been revised to withdraw all Federal minerals (19,765 acres). For additional information please refer to response C2.

Comment: During the 20 year withdrawal, would claim holders be required to keep up with assessment work.

Response: A withdrawal of Federal minerals would be subject to valid existing rights consistent with the Mining Law of 1872. Holders of the existing claims would be required to keep up with assessment work.

Comment: Who gave BLM the authority to give the mining industry the go ahead?

Response: These lands have been open to mineral entry since acquired by the U.S. in 1888. In February 1992, the BLM and Montana Department of State Lands received a proposal from Manhattan Minerals (US) Ltd. to conduct exploration activity in the Tootsie Creek drainage of East Butte. In August 1993, the BLM suspended processing of this exploration proposal in order to complete a validity examination on the existing claims and involve all interested publics in a resource management plan amendment process.

Comment: What is the time schedule for the validity exam process?

Response: Please refer to response E14.

Comment: If Lehmann were to prove the claims were valid under Alternative C, could he apply for patent?

Response: The results of the validity exam conducted by the BLM indicate eight of the claims on East Butte meet the test of discovery under the mining law and are valid. E.K. Lehmann could apply for patent on the valid claims.

Comment: Can BLM deny access to private land with federal minerals?

Response: No, the BLM cannot deny reasonably access across public land to private land. For additional information please refer to response E17.

Comment: If you make a deal with Lehmann to mine, what is our percent of the royalty?

Response: The BLM does not collect royalties from locatable minerals such as gold and silver. The State of Montana does receive tax revenues during the production phase of a mine from Gross Proceeds Tax, Metal Mines License Tax, and the Resource Indemnity Trust Tax (page 35 of the draft amendment/EIS).

Comment: If, in fact, we want to protect the Sweet Grass Hills, why make Alternative C the preferred which doesn't do that?

Response: Please refer to response C2.

Comment: If Lehmann was allowed to explore or mine, would the public have access into the area?

Response: For safety considerations, public access could be restricted in areas where exploration and/or mining is occurring.

Comment: Where are Lehmann's claims located? How many acres?

Response: The 14 claims are located in the Tootsie Creek area of East Butte and cover approximately 280 acres. The BLM conducted a validity exam of existing claims in the East Butte area. The results indicate eight of the claims meet the test of discovery under the mining law and are valid. Please refer to Figure 2 in the final amendment/EIS.

Comment: Why was the disturbance in the reasonably foreseeable development scenario in the draft EIS only 100 acres?

Response: Please refer to response E4.

Comment: In Appendix D, last sentence, is that a value of a developed mine or an estimate of the present value of existing claims?

Response: That would be the value of the hypothetical underground mine using a 10 percent discount rate.

Comment: When did that area become part of raptor protection?

Response: The West HiLine RMP (1988) included special oil and gas stipulations for raptors.

Comment: Has there been significant cultural sites where Lehmann is interested?

Response: Please refer to responses L9 and L10.

Comment: Is the whole area a historic site?

Response: Please refer to response L3.

Comment: Why doesn't BLM essentially maintain the 19,000 acre withdrawal?

Response: The preferred alternative has been revised to withdraw all Federal minerals (19,765 acres). For additional information please refer to response C2.

Comment: What kind of restrictions will be placed on the landowners?

Response: The BLM has no authority to restrict use on private land.

Comment: Can private citizens go in and sue to protect the water?

Response: Civil suits are a matter left to private citizens and the court.

Comment: How far would the BLM acquire surrounding lands?

Response: Areas identified as high priority for acquisition include the mineral estate of patented mining claims adjacent to the ACEC, valid unpatented mining claims, and lands in the vicinity of Devils Chimney Cave. All acquisitions would depend on a willing seller.

Comment: Cyanide - I'd like to know what it is, what natural resources make it up, how toxic it is, and how long it lasts.

Response: Cyanide is a simple organic compound. The cyanide ion is composed of a single carbon atom and a single nitrogen atom with a single negative charge (CN⁻). Cyanide used in precious metals extraction is shipped as sodium cyanide (NaCN). There are three general categories of cyanide, free cyanide, weakly complexed cyanide, and strongly complexed cyanide. These vary in toxicity and stability with the free cyanide being the most toxic and least stable.

Free cyanide is obtained from sodium cyanide for use in mineral processing. At a pH greater than 10 the cyanide exists in solution as CN⁻, the active leaching radical. At lower pH levels the cyanide combines with hydrogen ions to form hydrogen cyanide gas (HCN) which is released to the atmosphere. At a neutral pH of 7 virtually all the cyanide in solution will be converted to HCN gas. For this reason cyanide leaching solutions must be kept at a high pH to be efficient. Once pH control of the leaching solution ceases, cyanide is rapidly lost to the atmosphere as a gas where it undergoes additional degradation through oxidation and exposure to sunlight, ultimately being converted to carbon dioxide and nitrogen. While not as toxic as free cyanide, the weakly and strongly complexed cyanide molecules are more resistant to this breakdown and persist longer in the environment.

Cyanide, especially free cyanide, is quite toxic. Typical leaching solution contains 300 to 500 mil-

ligrams of cyanide per liter. This concentration is lethal to waterfowl and most terrestrial wildlife which may drink from uncovered solutions. The recommended limit for cyanide in human drinking water is 0.2 mg/l. Chronic exposure criteria are considerably lower for fish and other aquatic organisms at 0.005 mg/l. Should cyanide be released into the environment it degrades to sub-lethal levels due to dilution, oxidation, attenuation and volatilization as a gas. Cyanide contamination would persist longer in groundwater where there is no sunlight and little available oxygen. Cyanide is not bioaccumulative and is not a known carcinogen.

Comment: ORV use - I think there should be a committee formed of all people including ORV people, sportsmen, surrounding landowners, grazing lessees, conservationists, Native Americans, general public, and possibly they could come to a resolution of this issue.

Response: The public involvement process for the amendment/EIS provides for comments and recommendations on this issue (public scoping, public comment period on the draft amendment/EIS). For additional information please refer to response A3.

Comment: If a leach pad was built in Tootsie Creek what would happen to the water quality?

Response: The amendment/EIS addresses the potential impacts to water quality from possible exploration and mine development (pages 29 to 31 of the draft amendment/EIS).

Comment: The first time I heard the caves mentioned was tonight. Are there any paleontological studies in the hills?

Response: The geology of the Sweet Grass Hills indicates that paleontological resources would not be an issue. A discussion of Devil's Chimney Cave has been added to the Geology section of Chapter 3 in the final amendment/EIS.

Comment: I would like to see moratorium placed on new mining claims in the Sweet Grass Hills and then an alternative where the small mining claims could go on as they always have, but that no large mining could occur in the hills.

Response: Please refer to response E6.

Public Meeting - Rocky Boy, Montana

Comment: Under Alternative B, what do you mean by a discretionary closure for oil and gas?

Response: Leasing is a discretionary action as specified in the Mineral Leasing Act of February 25, 1920, as amended.

Comment: I would like to know the amount invested so far in exploration. How many miles of road have been built, how many core holes dug, and how many dollars have been spent?

Response: In June 1986, Santa Fe Pacific Mining was authorized to construct approximately 14,000 feet of access road and drill six in-road sites in the Tootsie Creek drainage of East Butte. In 1989, Cominco American Resources, Inc. of Spokane, Washington, received approval to construct 2,600 feet of access road and drill nine in-road sites in the Tootsie Creek drainage of East Butte. Cominco eventually constructed 2,000 feet of access road and drilled three of the proposed locations during 1989.

Expenditures for hardrock exploration in the Sweet Grass Hills since 1983, are estimated to be between \$1.5 and \$2 million, occurring during the field season between May and October.

Comment: What's going to happen to all the comments from the public meetings?

Response: All comments, written or oral, were reviewed and considered. Comments that presented new data, questioned facts or analysis, or raised questions or issues bearing directly upon the alternatives or environmental analysis were responded to in this final amendment/EIS. Comments expressing personal opinions and comments and letters received after May 18, 1995, were considered but not responded to directly.

Comment: What is the possibility or process for getting copies of the comments?

Response: Please refer to response N2.

Comment: How did BLM come up with Alternative C as the preferred?

Response: Please refer to response C2.

Comment: How much has the BLM spent for the validity exam process?

Response: The total costs covering work performed in fiscal years 1994 and 1995 are about \$83,000. Additional cost could be associated with contest litigation for the six claims which do not meet the test of discovery. A hearing, before an Administrative Law Judge, has been requested by the claimant on this matter.

Comment: How much has the BLM spent for the entire project?

Response: The BLM's financial management system does not track costs for individual projects such as the amendment/EIS for the Sweet Grass Hills.

Comment: Is there a rule the public can look at for the 2 year segregation notice?

Response: Segregation is covered under the Code of Federal Regulations, 43 CFR 2300.

Comment: In the event that a party appeals the EA, what does that do to the August 3, 1995 deadline?

Response: The amendment/EA was released to the public on May 11, 1995 for a 30 day protest period ending on June 16, 1995. The BLM received a protest on the amendment/EA on June 14, 1995. Based on a review of the amendment/EA, the BLM Director determined that the EA was not sufficient to support the Montana State Director's decision, because it did not consider all relevant alternatives and the agency was analyzing long term management strategies in an ongoing EIS. Accordingly, the Director overruled the State Director's decision and the protest was declared to be moot and dismissed.

In July 1995, Congressman Pat Williams introduced legislation to protect the Sweet Grass Hills (H.R. 2074). In aid of that legislation, Assistant Secretary Armstrong, on July 24, 1995, approved a petition to file an application withdrawing the lands from location and entry under the mining laws. Notice of this action appeared in the Federal Register edition of July 28, 1995. Consequently, subject to valid existing rights, the Sweet Grass Hills were segregated from location under the mining laws for a period of up to two years, while the application for the proposed withdrawal in aid of legislation is being processed.

Comment: If private and foundation dollars could be raised to go in with some federal money to acquire mining claims and private sources were to hold these claims, would we have to do assessment work.

Response: Holders of claims would have to comply with current laws including the need to do assessment work.

Comment: If a mine wants to expand in an area with federal minerals and private surface what private rights do the surface owners have?

Response: Mineral ownership takes precedence over surface ownership, however, State law provides for compensation to the surface owner.

Comment: When did the process start for the EA?

Response: The process for the amendment/EA addressing a 19,765 acres withdrawal for the Sweet Grass Hills began with a Notice of Intent published in the Federal Register on February 17, 1995. This was followed by scoping and public meetings in February, 1995. An amendment/EA was released to the public in May 1995 with a 30-day protest period.

Comment: When will validity exams be complete and how and who will be notified?

Response: Please refer to response E14.

Comment: Do you have a feel for what we know from past interest as to whether there might be valuable minerals?

Response: Please refer to response E14.

Comment: The minerals in Section 19, an old patent, are still private, who does it belong to?

Response: Once the lands leave Federal ownership, the records are maintained by the respective county.

Comment: When will the record of decision on the EIS be completed?

Response: The final amendment/EIS is released to the public with a 30-day protest period. The BLM may issue a Record of Decision 30 days after release of the final amendment/EIS approving implementation of any portions of the proposed plan amendment not under protest. Approval would be withheld on any portion of the plan amendment under protest until the protest has been resolved.

Comment: Why are they so interested in the Sweet Grass Hills if the area has little mining value?

Response: Please refer to response E14.

Comment: Where does the water from Sweet Grass Hills come from? What formation?

Response: The ground water in the Sweet Grass Hills is recharged locally by surface flows over exposed limestones, sandstones, and glacial deposits of sand and gravels on the flanks of the Sweet Grass Hills. In the foothills and plains the aquifer

systems become more continuous. Two principal unconsolidated aquifer systems are the shallow alluvium of the principal streams, and the interstratified sand gravel in glacial deposits. Two consolidated aquifer systems also exist in the study area, the Judith River Formation and the Virgelle Sandstone Member of the Eagle Sandstone.

Comment: Is there a legal way to differentiate between the types of mining?

Response: Please refer to response E6.

GLOSSARY

ACCESS. Access is the physical ability to reach a particular place or area. For the public to legally have access to BLM land, they must have both a physical way to get there (waterway, foot/horse trail, or road) and permission (easement, right-of-way, or management sanction) allowing that particular type of physical access.

ACTIVITY PLAN. A detailed and specific plan for a single resource program to implement the more general resource management plan (RMP) decisions.

AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC). An area where special attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values; fish and wildlife resources; or other natural systems or processes; or to protect life and safety from natural hazards.

COMPACTION. The process of packing firmly and closely together; the state of being so packed, e.g., mechanical compaction of soil by livestock or vehicular activity. Soil compaction results from particles being pressed together so that the volume of the soil is reduced. It is influenced by the physical properties of the soil, moisture content and the type and amount of compactive effort.

CRITICAL HABITAT. Any habitat, which if lost, would appreciably decrease the likelihood of the survival and recovery of a threatened or endangered species, or a distinct segment of its population. Critical habitat may represent any portion of the present habitat of a listed species and may include additional areas for reasonable population expansion. Critical habitat must be officially designated as such by the Fish and Wildlife Service or the National Marine Fisheries Service.

CRUCIAL WILDLIFE HABITAT. Parts of the habitat necessary to sustain a wildlife population at critical periods of its life cycle. This is often a limiting factor on the population, such as breeding habitat, winter habitat, etc.

CULTURAL PROPERTY. A definite location of past human activity, occupation, or use identifiable through field inventory, historical documentation, or oral evidence. The term includes archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (sites or places) or traditional cultural or religious importance to specified social and/or cultural groups.

CULTURAL RESOURCES. A term that includes items of historical, archaeological or architectural significance which are fragile, limited and non-renewable portions of the human environment.

CULTURAL RESOURCE MANAGEMENT PLAN (CRMP). An activity plan in which the determinations made in a resource management plan (RMP) are developed into specific management decisions. CRMP development has two products: the allocation of all of the planning area's cultural resources to use categories and the establishment of related protection and information gathering priorities.

ENDANGERED OR THREATENED SPECIES. Determined for plants and animals by one or a combination of the following factors:

1. The present or threatened destruction, modification or curtailment of a species habitat or range.
2. Over-utilization of a species for commercial, sporting, scientific or educational purposes.
3. Disease or predation of the species.
4. The inadequacy of existing regulatory mechanisms.
5. Other natural or human caused factors affecting a species' continued existence.

ENVIRONMENTAL ASSESSMENT. A concise public document for which a Federal agency is responsible that serves to:

1. Briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact.
2. Aid an agency's compliance with the Act when no environmental impact statement is necessary.
3. Facilitate preparation of a statement when one is necessary. Shall include brief discussions of the need for the proposal, of alternatives as required by Sec. 102(2) (e), of the environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted.

ENVIRONMENTAL IMPACT STATEMENT (EIS). A detailed written statement as required by Sec. 102(2) (C) of the National Environmental Protection Act.

EXCHANGE. A conveyance of lands and interests therein from the United States to a person at the same time there is a conveyance of lands and interests therein from the person to the United States.

FEDERAL LAND POLICY AND MANAGEMENT ACT OF 1976 (FLPMA). Public Law 94-579, October 21, 1976, often referred to as the BLM's "Organic Act," which provides the majority of the BLM's legislated authority, direction, policy and basic management guidance.

FUNCTIONING AT RISK. Riparian-wetland areas that are in functional condition but an existing soil, water, or vegetation attribute makes them susceptible to degradation.

GROUND WATER. Water contained in pore spaces of consolidated and unconsolidated subsurface material.

LEASABLE MINERALS. Those minerals or materials that can be leased from the federal government. Includes oil and gas, coal, phosphate, sodium, potash, and oil shale.

LOCATABLE MINERALS. Minerals or materials subject to disposal and development through the Mining Law of 1872 (as amended). Generally includes metallic minerals such as gold and silver and other materials not subject to lease or sale (some bentonites, limestone, talc, some zeolites, etc.).

MANAGEMENT ACTIONS. Any actions proposed to preserve a resource, increase or decrease production and/or use, regulate or minimize depletion of resources, or improve the conditions of a resource through application of professionally recognized methods, techniques, or treatments.

MINERAL MATERIALS. Includes common varieties of mineral resources which are not locatable under the mining law nor leasable under the leasing laws. Examples include: sand and gravel, rip rap, building stone, decorative stone, and construction material.

MONITOR. To watch or check. Rangeland resources are monitored for changes that occur as a result of management actions or practices.

MONTANE. Inhabiting the cool, moist ecological zone located near the timberline and usually dominated by evergreen trees.

NONFUNCTIONAL. Riparian-wetland areas that clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows and thus are not reducing erosion, improving water quality, etc. The absence of certain physical attributes

such as a floodplain where one should be are indications of nonfunctioning conditions.

OFF-ROAD VEHICLE (ORV). Any motorized track or wheeled vehicle designed for cross-country travel over any type of natural terrain.

OFF-ROAD VEHICLE DESIGNATIONS.

Open: Designated areas and trails where off-road vehicles may be operated, subject to operating regulations and vehicle standards set forth in BLM Manuals 8341 and 8343; or an area where all types of vehicle use is permitted at all times, subject to the standards in BLM Manuals 8341 and 8343.

Limited: Designated areas and trails where the use of off-road vehicles is subject to restrictions such as limiting the number or types of vehicles allowed, dates and times of use (seasonal restrictions), limiting use to existing roads and trails, or limiting use to designated roads and trails. Under the designated roads and trails designation, use would be allowed only on roads and trails that are signed for use. Combinations of restrictions are possible such as limiting use to certain types of vehicles during certain times of the year.

Closed: Designated areas and trails where the use of off-road vehicles is permanently or temporarily prohibited. The use of off-road vehicles in closed areas may be allowed for certain reasons; however, such use shall be made only with the approval of the authorized officer.

PLANNING CRITERIA. The factors used to guide development of the resource management plan, or revision, to ensure that it is tailored to the issue previously identified and to ensure that unnecessary data collection and analysis are avoided. Planning criteria are developed to guide the collection and use of inventory data and information, the analysis of the management situation, the design and formulation of alternatives, the estimation of the effects of alternatives, the evaluation of alternatives, and the selection of the preferred alternative.

PROPER FUNCTIONING CONDITION. Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high waterflows, thereby reducing erosion and improving water quality; filter sediment, capture bedload, and aid floodplain development; improve flood-water retention and ground water recharge; develop ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and

other uses; and support greater biodiversity. The functioning condition of riparian-wetland areas is a result of interaction among geology, soil, water, and vegetation.

PUBLIC LANDS or BLM LANDS. Any land and interest in land (outside of Alaska) owned by the United States and administered by the Secretary of the Interior through the Bureau of Land Management.

PUBLIC PARTICIPATION. Part of BLM's planning system that provides the opportunity for citizens as individuals or groups to express local, regional, and national perspectives and concerns in the rule making, decision making, inventory and planning, processes for public lands. This includes public meetings, hearings, or advisory boards or panels that may review resource management proposals and offer suggestions or criticisms for the various alternatives considered.

RESOURCE MANAGEMENT PLAN. The system that provides a step-by-step process for considering multiple resource values, resolving conflicts, and making resource management decisions.

ROAD. A two-track route established from use of four-wheeled vehicles over a period of time; or a route constructed for access by four-wheeled motorized vehicles larger than 50" in width but not maintained annually; or a route maintained periodically for access by four-wheeled vehicles larger than 50" in width.

SALEABLE MINERALS. High volume, low value mineral resources including common varieties of rock, clay, decorative stone, sand and gravel.

SEDIMENT. Soil, rock particles and organic or other debris carried from one place to another by wind, water or gravity.

SEGREGATION. The removal for a limited period, subject to valid existing rights, of a specified area of the public lands from the operation of the public land laws, including the mining laws, pursuant to the exercise by the Secretary of the Interior of regulatory authority as conferred by law to allow for the orderly administration of the public lands.

SENSITIVE SPECIES. Animals/plants not yet listed as endangered or threatened, but that are undergoing a status review. This may include animals/plants whose populations are consistently and widely dispersed or whose ranges are restricted to a few localities, so that any major habitat change could lead to extinction. A species that is particularly sensitive to some external disturbance factors.

SOIL. The unconsolidated mineral material on the immedi-

ate surface of the earth that serves as a natural medium for the growth of land plants.

SOIL MOISTURE. Water held in the root zone by capillary action. Part of the soil moisture is available to plants, part is held too tightly by capillary or molecular forces to be removed by plants.

SPECIAL RECREATION MANAGEMENT AREA (SRMA). BLM administrative units established to direct recreation program priorities, including the allocation of funding and personnel, to those BLM lands where a commitment has been made to provide specific recreation activity and experience opportunities on a sustained yield basis. This includes a long-term commitment to manage they physical, social, and managerial settings to sustain these activity and experience opportunities.

SPECIES OF SPECIAL INTEREST OR CONCERN. Species not yet listed as "endangered or threatened" but whose status is being reviewed because of their widely dispersed populations or their restricted ranges. A species whose population is particularly sensitive to external disturbance.

THREATENED SPECIES. A species that the Secretary of Interior has determined to be likely to become endangered within the foreseeable future throughout all or most of its range. See also "Endangered or Threatened Species."

TOTAL DISSOLVED SOLIDS. The dry weight of dissolved material, organic and inorganic, contained in water.

TRAIL. A single track route that accommodates non-motorized use, or motorized equipment that is less than 50" wide.

UNNECESSARY OR UNDUE DEGRADATION. Surface disturbance greater than what would normally result when an activity is being accomplished by a prudent operator in usual, customary, and proficient operations of similar character and taking into consideration the effects of operations on other resources and land uses, including those resources and uses outside the area of operations.

VALID EXISTING RIGHTS. Legal interests that attach to a land or mineral estate that cannot be divested from the estate until that interest expires or is relinquished.

WATER QUALITY. The chemical, physical and biological characteristics of water with respect to its suitability for a particular use.

WATERSHED. All lands which are enclosed by a continuous hydrologic drainage divide and lie upslope from a specified point on a stream.

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APPENDIX A

HARDROCK MINERAL RESOURCES REASONABLY FORESEEABLE DEVELOPMENT SCENARIO

INTRODUCTION

Purpose

The purpose of this reasonably foreseeable development scenario (RFD) is to provide a model that anticipates the level and type of future hardrock mineral activity in the Sweet Grass Hills study area and serve as a basis for cumulative impact analysis. The RFD first describes the main legal framework of hardrock development, the Mining Law of 1872. Next is a discussion of the steps involved in developing a mineral deposit, with presentation of two hypothetical mining operations. There is no current mining proposed for the Sweet Grass Hills and this analysis is based on the current management situation which would allow such a proposal if continued exploration discovered minable reserves.

Scope

The RFD is based on inferred mineral resource capabilities of the lands involved, and applies conditions and assumptions with minimal geologic data to support them. This does not constitute proof that a deposit is present. The geological and technical data is solely for the purpose of analyzing impacts to resources of exploration and hypothetical mining activity. Changes in available geologic data and/or economic conditions would alter the RFD, and some deviation is to be expected over time.

The development scenario is based on actual conditions in other central Montana areas with active mining in progress. The types of land included is restricted to federal, or federal minerals only, administered by the BLM. Activities on private, or state lands are included when Bureau of Land Management (BLM) land or minerals are nearby and may be involved or affected. The hypothetical mines presented could occur on existing private lands where mineral discovery has been established in the past or on federal mineral lands if further exploration defines a sufficient mineralized area that justifies mining.

The mineral commodities dominating activity are gold and silver. The RFD will pay special attention to precious metal mining since this activity has been the major interest of the mineral industry in the last 15 years and this interest is expected to continue into the foreseeable future.

Study Area

A description of the areas geology and mining history can be found in Chapter 3. The interest in this area is due to the similarity to other areas in central Montana which have existing or past producing mines. Gold mineralization ranges from igneous hosted stockworks or fracture sets and breccia pipes to replacement zones in the flanking and upturned Madison Group limestones (North Moccasins and Little Rocky Mountains). The latter are mostly localized by intraformation solution breccias in the upper Madison, near the porphyry contacts. Gold occurs as auriferous pyrite, sylvanite, or in native form. Mineralization is accompanied by varying amounts of silver, base metal and tellurides, with quartz, fluorite, carbonate and barite (Giles, 1982).

THE MINING LAW

History

The General Mining Law of 1872 (17 Stat. 91) is the authorizing act for hardrock mineral exploration and development in the study area. The origin of the Mining Law can be traced to the 16th century, and reflects close ties to English and Spanish traditions.

Early American colonial charters contained outright grants of mineral land to settlers, however, these grants were accompanied by certain permanent reservations of precious metals to the sovereign. This formed the basis for the early traditions and customs regarding mineral rights for the colonies in the eastern part of the United States until the early 1800's.

In the western states, and especially in the Southwest, mining customs and traditions were derived from the Royal Code of 1783. This code formed the basis for acquisition of mineral rights by miners, and settlement of disputes between claimants.

In 1849 there was no formal mining law in the United States. Congress passed several leasing or sales acts of limited duration for gold, silver, lead, and iron. These acts were administered by the War Department. In 1849, when the California gold rush started, miners were technically in mineral trespass when they located claims on the public domain. The gold rush brought into conflict the two mining traditions. In 1860, the silver strike in the Comstock Lode in Nevada started a second mining rush to the West, opening up further conflict between the two mining traditions. As eastern interests were financing the Comstock Lode as well as the California Mother Lode, the question of security of title and tenure became a major political issue in Congress.

From 1865 to 1885, congressional policy for the public lands focused on encouraging westward migration of people to settle and develop the West. In furthering this policy a series of statutes was passed including various homestead acts, agricultural entry laws, soldier compensation acts and several acts designed to emphasize mineral exploration and development.

On July 26, 1866, the first mining law was passed as the Lode Law of 1866 (14 Stat. 251). This act provided for the entry and location of lode claims, assessment work and patents for lode claims.

The Placer Act was passed on July 9, 1870. It provided for the entry and location of placer claims on non-agricultural land, for location by legal description, and for patent.

These two acts were consolidated, with amendments, into the General Mining Law of May 10, 1872. This statute is the basis for appropriation of hardrock mineral resources from the public domain today.

Principles

The Mining Law consists of five basic elements: discovery of a valuable mineral, location of mining claims, recordation of claims, maintenance - performance of annual requirements on claims, and patenting of the mineral, and possibly surface, estate to the claimant.

Discovery

There is no federal statutory definition of what constitutes a valuable mineral deposit. Several judicial and administra-

tive rulings or declarations on the subject have been made. In 1894 in the case of Castle v. Womble, the Department of the Interior established the "prudent man rule." This rule states:

"...where minerals have been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of his labor and means, with a reasonable prospect of success in developing a valuable mine, the requirements of the statutes have been met."

This definition was approved by the United States Supreme Court in 1905.

In 1968 in the case of U.S. v. Coleman, the Supreme Court approved the marketability test as a complement to the prudent man rule. This test requires a showing of marketability to confirm that a mineral could be mined, removed and marketed at a profit. In other words, the marketability test takes into account economics, requiring the claimant to show that there is a reasonable prospect of selling material from a claim or a group of claims. It is not necessary that the material has been sold or is selling at a profit, but that there is a reasonable likelihood that it could be sold at a profit. Demonstrating an established market is not difficult for precious metal commodities.

Location

Mining claims may be located only by citizens of the United States, persons who have declared an intention to become citizens, and corporations organized under any State law. Mining claims may only be located on federal lands open to mineral entry under the mining laws, and only for mineral commodities considered to be "locatable". A complete list of locatable mineral commodities would be exhaustive. Basically a mineral is locatable if it is in the public domain, and is a metallic mineral, or one of uncommon variety valuable chiefly for chemical, rather than physical properties. Mining claims may be located before or after discovery of a valuable mineral, on unappropriated public domain land. This claim grants the locator an exclusive possessory right to the mineral deposit. This possessory right allows the locator to continue to develop the claim as provided for by law. It is valid against the United States and other claimants only if a valuable mineral deposit has been discovered.

There are two types of mining claims; lode, and placer. Lode claims are located on indurated bedrock; while placer claims are usually located on loosely consolidated materials such as mineral bearing sands and gravels. Two additional types of mining claims may be located under the mining law: mill sites, and tunnel sites. A mill site may be located on unappropriated public domain land that is

nonmineral in character. It is used for the erection of a mill or reduction works, or for other uses reasonably incident to a mining operation. A tunnel site may be located on a plot of land where a tunnel is run to develop a vein or lode, or for the purpose of intersecting unknown veins or lodes.

The actual location of a mining claim in Montana involves posting a notice of location at the discovery point; and erecting corner posts, or monuments, on the ground to insure that the claim boundaries are readily identifiable.

Recordation

Prior to the Federal Land Policy and Management Act (FLPMA), claimants were required to file their location and assessment notices only in the office of the County Recorder, or County Clerk, in the county in which the claim was located. Since enactment of FLPMA, notices of location and other notices must be filed with the BLM state office, as well as the appropriate county recorder. This requirement has allowed BLM to know the number and types of claims located on public land and their current status. Failure to file these documents with the BLM is considered abandonment of a mining claim.

Maintenance

The General Mining Law of 1872 requires performance of an annual minimum of \$100 worth of labor or improvements to retain a possessory interest in the claim. An affidavit of assessment work must be filed with both the county recorder, and with the BLM state office. Owners of mill and tunnel sites are not required to file assessment work, but are required to file a notice of intent to hold the site. A recent (October 6, 1992) change to this process requires most claimants to pay a rental fee, in lieu of assessment work. Exemptions from this fee were provided for claimants with 10 or fewer claims.

Exploration and mining activities on BLM administered lands are subject to regulation under 43 CFR 3802 and 43 CFR 3809. These regulations require that an operator prevent unnecessary or undue degradation and perform reasonable reclamation.

Patents

It is not necessary to have a patent to mine and remove minerals from a mining claim. In fact, it is not even necessary to have a mining claim at all if the land is open to mineral entry. However, a patent gives the owner exclusive title to the locatable minerals and, in most cases, to the surface estate. In order to obtain patent the claimant must have performed at least \$500 worth of development work per claim; had a mineral survey and plat prepared at their

expense; show they hold possessory rights by chain of title documents; publish a notice for potential adverse claimants to assert their claims; and demonstrate discovery of a valuable mineral deposit within the meaning of the Mining Law.

Upon satisfactory completion of the above requirements the claimant is given the opportunity to purchase the mining claim(s) at \$2.50 per acre for placer claims and \$5 per acre for lode claims.

DEVELOPMENT OF A MINE

The development of a mine from exploration to production can be divided into six stages. Each stage requires the application of more discriminating (and more expensive) techniques over a successively smaller land area to identify, develop, and produce an economic mineral deposit.

A full sequence of developing a mineral project involves the following stages: appraisal of a large region, reconnaissance of selected parts of the region, detailed surface investigation of a target area, three dimensional physical sampling of the target area, development of the mine infrastructure, and actual production. These can be grouped into four categories: Reconnaissance, Prospecting, Exploration, and Mine Development. A diagram showing the relationship of these various stages in the life of a mine is shown in Figure A.1.

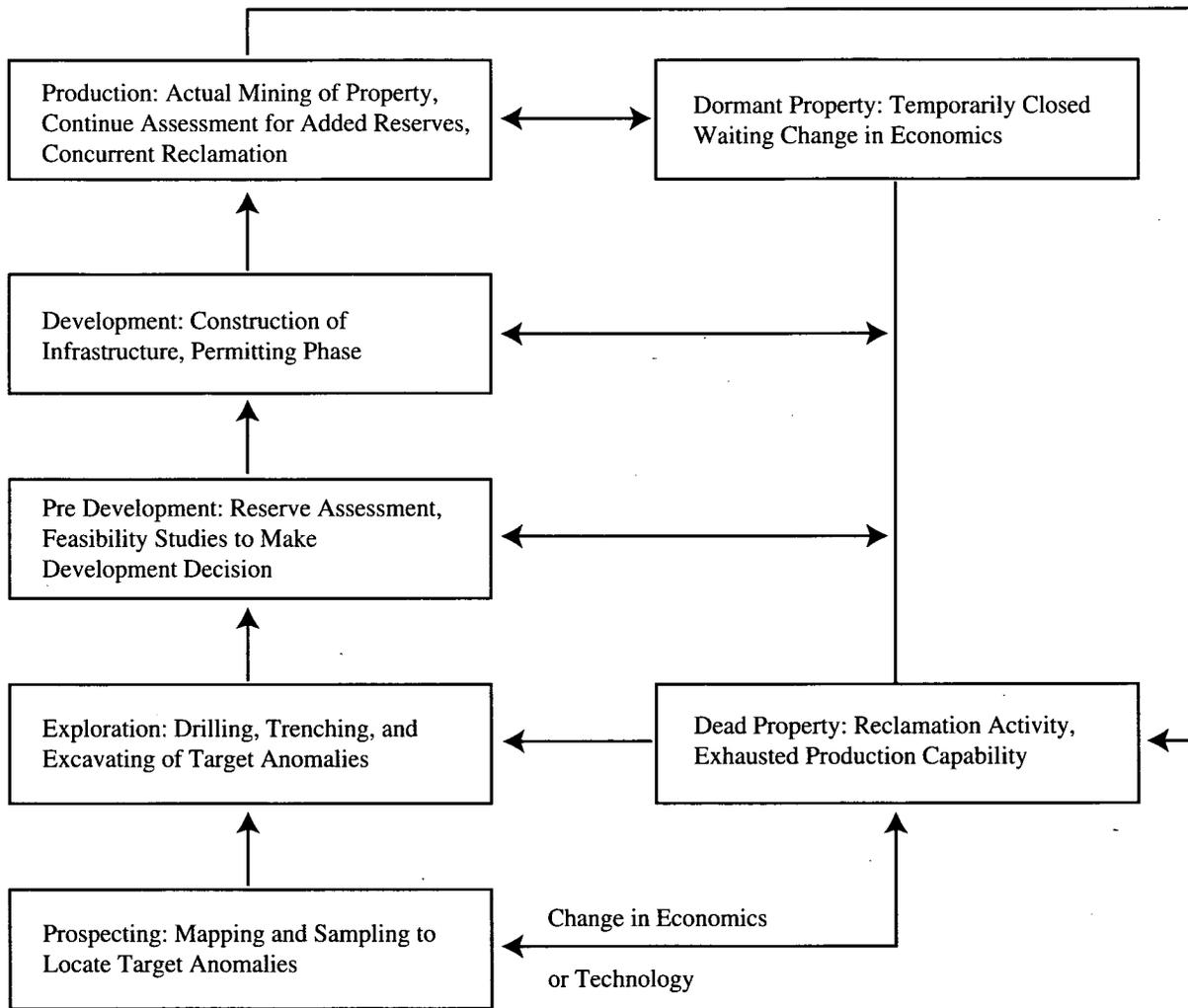
Reconnaissance

Reconnaissance level activity is the first stage in exploring for a mineral deposit. This activity involves initial literature search of an area of interest, using available references such as publications, reports, maps, aerial photos, etc. The area of study can vary from hundreds to thousands of square miles.

Activity that will normally take place includes large scale mapping, regional geochemical and geophysical studies, and remote sensing with aerial photography or satellite imagery. These studies are usually undertaken by academic or government entities, or major corporations.

The type of surface disturbing activity associated with reconnaissance level mineral inventory is usually no more than occasional stream sediment, or soil and rock, sampling. Minor off-road vehicle use may be required.

FIGURE A.1 - MINE LIFE CYCLE DIAGRAM



Source: BLM

Prospecting

As the result of anomalous geochemical or geophysical readings, unique geologic structure or feature, occurrence of typical mineral bearing formations, or a historical reference to past mineral occurrence, the prospecting area of interest is identified through reconnaissance. This area may range from a single square mile to an entire mountain range of several hundred square miles.

Activity that will take place in an effort to locate a mineral prospect include more detailed mapping, sampling, geochemical and geophysical study programs. Also this is the time when property acquisition efforts usually begin, and most mining claims are located in order to secure ground while trying to make a mineral discovery. Prospecting on an annual basis is considered a minimum requirement, under the mining laws, to secure a claim.

Types of surface disturbing activity associated with prospecting would involve more intense soil and rock chip sampling using mostly hand tools, frequent off-road vehicle use, and placement and maintenance of mining claim monuments. This activity is normally considered “casual use” (43 CFR 3809.1-2) and does not require BLM notification or approval.

Exploration

Upon location of a sufficiently anomalous mineral occurrence, or favorable occurrence indicator, a mineral prospect is established and is subjected to more intense evaluation through exploration techniques.

Activities that take place during exploration include those utilized during prospecting but at a more intense level in a smaller area. In addition activities such as road building,

trenching, and drilling are conducted. In later stages of exploration an exploratory adit or shaft may be driven. If the prospect already has underground workings these may be sampled, drilled, or extended. Exploration activities utilize mechanized earth moving equipment, drill rigs, etc., and may involve the use of explosives.

A typical exploration project in the planning area would require construction of approximately 5,000 feet of access road, establishment of about a dozen drill sites, with several holes at each site drilled to less than 500 feet deep, and possibly several trenches 200 feet by 8 feet by 6 to 8 feet deep. If initial results are encouraging, the exploration program will be expanded to determine the limits of the deposit. Most surface disturbance associated with exploration projects amounts to less than 5 acres and is conducted under a Notice (43 CFR 3809.1-3) and requires the operator to notify BLM 15 days before beginning activity.

Mine Development

If exploration results show that an economically viable mineral deposit may be present, activity will intensify to obtain detailed knowledge regarding reserves, possible mining methods, and mineral processing requirements. This will involve applying all the previously utilized exploration tools in a more intense effort. Once enough information is acquired a feasibility study will be made to decide whether to proceed with mine development and what mining and ore processing methods will be utilized.

Once the decision to develop the property is made the mine permitting process begins. Upon approval, work begins on development of the mine infrastructure. This includes construction of the mill, offices and laboratory; driving of development workings if the property is to be underground mined, or prestripping if it is to be open pit mined; and building of access roads or haulage routes, and placement of utility services. During this time additional refinement of ore reserves is made.

Once enough facilities are in place actual mine production begins. Concurrent with production often are "satellite" exploration efforts to expand the mine's reserve base and extend the project life. Upon completion of, or concurrent with mining, the property is reclaimed. Often subeconomic resources remain unmined and the property is dormant, waiting for changes in commodity price or production technology that would make these resources economic (Figure A.1).

Activities that occur on these lands include: actual mining, ore processing, tailings disposal, waste rock placement, solution processing, metal refining, and placement of support facilities such as repair shops, labs, and offices. Such

activities involve the use of heavy earthmoving equipment and explosives for mining and materials handling, exploration equipment for refinement of the ore reserve base, hazardous or dangerous reagents for processing requirements, and general construction activities.

The size of mines vary greatly and not all mines would require all the previously mentioned facilities and equipment. Acreage involved can range from several single acres to several hundred, with most projects disturbing more than 5 acres and requiring an approved Plan of Operations (43 CFR 3809).

HYPOTHETICAL MINING OPERATIONS

Table A.1 shows two hypothetical mining operations that are somewhat representative of possible future development. These operations were derived from known mines and geologic conditions in the area. They are presented only to illustrate the possible variations in mine operations that could occur, and are not intended to be definitive as to mine size, type, processing, or economics. The data in the table is approximated and is presented to illustrate the variety of factors that are involved when evaluating the feasibility of a mining project.

The first operation is an open-pit, gold-silver mine using a cyanide heap leaching process. The size is one million tons of reserves. The ore material is placed on lined leach pads and sprinkled with a dilute cyanide solution which dissolves the gold and silver from the ore. The solution is then recovered and the precious metals extracted using zinc precipitation or carbon adsorption, after which the solution is reused. The life of the project, from discovery to reclamation, is estimated at nine years, with about six years of metal production.

The second operation shown is a small underground mine with an ore deposit of approximately 200,000 tons. The mining rate is 100 tons per day. Mineral processing would include crushing and grinding, with flotation and/or cyanide leaching in tanks or vats. Tailings from the operation would be placed in a lined impoundment. The project life is estimated at 10 years, from discovery to reclamation. Continued exploration in the area could result in additional reserves and extend the mine life.

Both of the operations could be located in the Tootsie Creek area of East Butte. The total area of disturbance for all roads, mills, plants, pads, and ponds would be less than 100 acres. The underground mine could result in less than 50 acres of surface disturbance. Continued exploration on both Middle and West Buttes is all that is anticipated for those areas.

TABLE A.1

HYPOTHETICAL MINING OPERATIONS

	Open-Pit	Underground
Capital Investment Mine	\$6,000,000	\$2,300,000
Capital Investment Mill	\$1,500,000	\$2,300,000
Total Capital Investment	\$7,500,000	\$4,600,000
Reserves (Tons)	1,000,000	200,000
Tons/day	1,000	100
Grade Au	0.06	0.35
Grade Ag	0.25	5.00
Recovery Au	0.7	0.85
Recovery Ag	0.40	0.80
Mine Production Years	4.00	8.00
Metal Production Years	6.00	8.00
Days/year operating	270	270
Price Au	\$400	\$400
Price Ag	\$6	\$6
Operating Costs/Ton Ore	\$7	\$90
Total Production		
Au (oz)	42,000	59,500
Ag (oz)	100,000	800,000
Total Gross Revenue	\$17,400,000	\$28,600,000
Average Annual Gross Revenue	\$2,900,000	\$3,575,000
Total Operating Costs	\$7,000,000	\$18,000,000
Average Annual Operating Costs	\$1,166,667	\$2,250,000
Total Net Revenue	\$10,400,000	\$10,600,000
Annual Net Revenue	\$1,733,333 (6 yrs.)	\$1,325,000 (8 yrs)
Production Employment	25	55
Average Annual Wage	\$34,900	\$34,900
Total Annual Wages	\$872,500	\$1,919,500
Avg Annual Resource Indemnity Tax	\$14,500	\$17,875
Average Annual Gross Proceeds Tax	\$26,363	\$32,499
Average Annual Metal Mines License Tax	\$38,160	\$54,164
Average Annual Property Tax	\$101,197	\$54,101
Average Annual Total Taxes	\$180,220	\$158,639
	Open-Pit	Underground
Year 1:	Development of infrastructure	Year 1: Development work & construction
Year 2:	Mining, pad constr., ore loading	
Year 3:	Ore loading, first Au/Ag production	Years 2-9: Ore production
Year 4:	Ore loading, Au/Ag production	Year 10: Reclamation
Year 5:	Ore loading, Au/Ag production	
Year 6:	Leaching, Au/Ag production	
Year 7:	Leaching, Au/Ag production	
Year 8:	Leaching, Au/Ag production	
Year 9:	Reclamation	

Source: BLM

PLAN OF OPERATIONS APPROVAL PROCESS

The Montana Department of Environmental Quality is the state permitting authority for hardrock operations in Montana. All Plans of Operations required by the BLM are reviewed and approved in coordination with the DEQ.

Often before submitting a proposed Plan of Operation to the BLM, or an Operating Permit Application to the DEQ, the operator will contact the agencies for guidance on specific information or data that should be included in the application. The application is then filed with both agencies who coordinate staffing needs and agency roles for permit review.

Upon receipt the application is reviewed for completeness. A completeness review involves identifying any additional data that the operator must provide to allow assessment of impacts, or commitments that must be made by the operator to reduce potential impacts and eliminate unnecessary or undue degradation. Guidance and authorities used during the completeness review process include; the FLPMA, appropriate resource management plan (RMP), BLM regulations 43 CFR 3809, BLM Reclamation Handbook, and the Montana Cyanide Management Plan. The deficiencies identified during a completeness review are provided to the applicant within 30 days. The applicant then revises their operating plan as appropriate and resubmits it to the agencies for another completeness review. The cycle of completeness review by the agencies, with subsequent modification of the operating plan by the applicant, continues until the application is declared "complete." It is during this process that many mitigating measures get built into the mine plan.

After a complete application is received the environmental analysis is prepared in accordance with both the Montana Environmental Policy Act (MEPA) and National Environmental Policy Act (NEPA) requirements. Depending on the anticipated impacts of the proposal this may be either an environmental assessment (EA) or an environmental impact statement (EIS). Typically (but not always) three alternatives are analyzed in the document: the operator's proposal, the operator's proposal with additional agency imposed modifications (usually the preferred alternative), and the no action alternative.

Public comment may be solicited at any time during the process. A public comment period is provided after release of the environmental document. This may vary from as little as 15 days, to more than 90 days, depending on the issues and interest. Public meetings for scoping and/or comment are held as appropriate.

After the environmental analysis is complete, and the public comments have been considered, the agencies make an approval decision. Conformance with the modified mining and reclamation plans, plus any additional mitigating measures, are conditions of approval.

A reclamation bond amount is calculated based on an engineering evaluation of what it would cost the agencies to reclaim the operation per the approved reclamation plan. The bond must be posted before on the ground disturbance can begin.

Amendments to existing Operating Permits, or Plans of Operations, are processed in a similar manner.

CURRENT ACTIVITIES

The number of mining claims in the study area is given in Table A.2. See Chapter 3 for additional information on current activities.

It is important to note that blocks of claims are located to serve as a basis for exploration projects. These blocks will naturally cover more area than the initial geology indicates is warranted so as to provide room for possible expansion should the mineral prospects be favorable.

Technology

Advances in technology will have a substantial affect on future mineral exploration and development. Advances in geophysical and geochemical survey methods and procedures will take place at a rapid rate. Computerization of exploration data will increase with more sophisticated geologic modeling methods being available to the average user. Large advances in satellite imagery, and utilization of remote sensing data, will be made as more and better equipment are placed into orbit. The effect of these advances will be a more accurate and rapid evaluation of regional and local areas with better discrimination of target areas, and a more accurate assessment of the deposits potential.

Mining and mineral processing efficiency will continue to improve in the future. This is due to advances in general technology being made available to the mining industry. A large amount of knowledge will continue to be gained with experience. This is especially true in the area of heap leaching technology which is barely two decades old. A large amount of metallurgical research is currently being done both by industry, and government agencies, such as the federal and state bureau of mines. The results are expected to improve leaching efficiency and recovery rates;

TABLE A.2

MINING CLAIMS IN THE STUDY AREA

Mining Claim Serial Number	Name of Claim or Site	Date of Location	Location of Claim
M MC 108494	Patricia 7	November 10, 1983	T.36N., R.5E., Section 19, SE1/4
M MC 108495	Patricia 8	November 10, 1983	T.36N., R.5E., Section 19, SE1/4
MTMMC 188489	Royal East #1	December 17, 1991	T.36N., R.5E., Section 19, SE1/4
MTMMC 188490	Royal East #2	December 17, 1991	T.36N., R.5E., Section 19, SE1/4
M MC 119609	Butte # 47	May 23, 1985	T.36N., R.5E., Section 20, SW1/4
MTMMC 170764	EB #4	July 21, 1989	T.36N., R.5E., Section 20, SW1/4
MTMMC 170765	EB #5	July 21, 1989	T.36N., R.5E., Section 20, SW1/4
MTMMC 170766	EB #6	July 21, 1989	T.36N., R.5E., Section 20, SW1/4
M MC 119610	Butte # 48	May 23, 1985	T.36N., R.5E., Section 29, NW1/4
M MC 108501	Patricia 14	November 10, 1983	T.36N., R.5E., Section 30, NE1/4
M MC 108502	Patricia 15	November 10, 1983	T.36N., R.5E., Section 30, E1/2
M MC 108503	Patricia 16	November 10, 1983	T.36N., R.5E., Section 30, NE1/4
M MC 108505	Patricia 18	November 10, 1983	T.36N., R.5E., Section 30, NE1/4
M MC 108507	Patricia 20	November 10, 1983	T.36N., R.5E., Section 30, NE1/4
M MC 42006	Meech #1	March 21, 1974	T.36N., R.3E., Section 17, SW1/4
M MC 42007	Meech #5	September 9, 1979	T.36N., R.3E., Section 17, SW1/4
M MC 56288	Meech #2	November 18, 1979	T.36N., R.3E., Section 17, SW1/4
M MC 56289	Meech #3	November 18, 1979	T.36N., R.3E., Section 20, N1/2
M MC 56290	Meech No. 4	November 18, 1979	T.36N., R.3E., Section 20, NE1/4
M MC 118619	Meech #6	March 11, 1985	T.36N., R.3E., Section 20, NE1/4

and develop methods for recovery from ores that are currently not amenable to leaching.

Reclamation has come of age in the last 15 years in response to growing environmental concern among the public. Reclamation science will continue to advance due to experience and research. More detailed design effort will be placed on reclamation of mined lands in the future. This will result in an overall increase in reclamation costs. These costs should pay dividends in the long-term with increased reclamation success.

Commodity Markets

The economics of mining in the planning area will be driven by the relationship between gold production costs and

market price. Though more silver is often produced than gold it is the relatively high unit value of gold that will be critical in establishing the economic viability of mining. While production costs can be controlled, or anticipated, through management and technology, the big unknown will be in the price of gold. The overall profitability of an operation, and hence the level of activity at the prospecting, exploration, and mining phases, for development of gold ore bodies will be closely related to the price of gold.

The price of gold and silver has varied considerably in the past (Table A.3). This is due to the deregulation of government price controls letting the commodities adjust to their true market values.

TABLE A.3

GOLD AND SILVER PRICES

Gold Prices 1960 - 1988					Silver Prices 1960 -1988			
Year	PPI* (Metals)	Gold (Cur \$)	Gold (Con \$)	10-yr Avg.	Year	Silver (Cur \$)	Silver (Con \$)	10-yr Avg.
1960	0.306	35.00	115.06		1960	0.91	2.43	
1961	0.305	35.00	114.68		1961	0.91	2.42	
1962	0.302	35.00	113.56		1962	1.09	2.40	
1963	0.303	35.00	113.93		1963	1.28	2.41	
1964	0.311	35.00	116.94		1964	1.29	2.47	
1965	0.320	35.00	120.32		1965	1.29	2.54	
1966	0.328	35.00	123.33		1966	1.29	2.61	
1967	0.332	35.00	124.84		1967	1.55	2.64	
1968	0.340	41.39	127.84		1968	2.15	2.70	
1969	0.360	41.30	135.36	120.59	1969	1.79	2.86	2.55
1970	0.387	36.18	145.52	123.63	1970	1.77	3.08	2.61
1971	0.394	41.01	148.15	126.98	1971	1.55	3.13	2.68
1972	0.409	58.40	153.79	131.00	1972	1.68	3.25	2.77
1973	0.440	97.60	165.44	136.15	1973	2.56	3.50	2.88
1974	0.570	160.01	214.33	145.89	1974	4.71	4.53	3.08
1975	0.615	161.21	231.25	156.98	1975	4.42	4.89	3.32
1976	0.650	125.34	244.41	169.09	1976	4.35	5.17	3.57
1977	0.693	148.32	260.57	182.67	1977	4.62	5.51	3.86
1978	0.753	193.53	283.14	198.19	1978	5.42	5.98	4.19
1979	0.860	307.62	323.37	217.00	1979	11.09	6.83	4.59
1980	0.950	612.51	357.21	238.16	1980	20.63	7.55	5.03
1981	0.996	459.62	374.51	260.80	1981	10.52	7.92	5.51
1982	1.000	376.01	376.01	283.02	1982	7.95	7.95	5.98
1983	1.018	423.83	382.78	304.76	1983	11.44	8.09	6.44
1984	1.048	360.29	394.06	322.73	1984	8.14	8.33	6.82
1985	1.044	317.30	392.55	338.86	1985	6.14	8.30	7.16
1986	1.032	367.84	388.04	353.22	1986	5.47	8.20	7.47
1987	1.071	446.41	402.71	367.44	1987	7.00	8.51	7.77
1988	1.187	436.07	446.32	383.76	1988	6.56	9.43	8.11
1989	—	382.69			1989	5.55		

* Producer Price Indexes from Statistical Abstract of United States 1989

Source: Gold and silver prices from EM&J (Handy & Harmon, NY)

The supply and demand for gold, and ultimately the price, are determined by many factors. On the supply side, production costs must be lower than price for firms to earn a profit. Relatively low-grade deposits, which were previously uneconomical to mine, have become profitable resources to develop due to the emergence of new production techniques in the past 15 years. Thus supply has been increasing while the relative cost of production generally has declined. However, the profitability of these mining processes has increased the number of suppliers worldwide and made the market more competitive.

The importance of gold as a store of wealth, including its role in world monetary systems, is the principal driving force that leads to efforts to find and produce more gold. From its use as an article of adornment, it grew to be a stable item of trade and eventually became what is now called money.

With the organization of industrialized nations and the development of international commerce, gold became the primary instrument for settlement of international debt, whether used in direct payment, or as backing (officially or

de facto) for national currencies. Thus gold is accumulated and held as reserves by national banking institutions, the so-called central banks.

Of the total gold available in the world today - which represents virtually all the gold that has ever been mined - about one-third is held by national central banks and other official agencies such as the World Bank and the International Monetary Fund as a support for monetary systems. Another third is held in private hoards, as a hedge against inflation and sudden domestic or international instabilities, or for speculation purposes. The other third is in jewelry (in some respects a store of wealth) and in other fabricated uses such as in the electronic industry and dentistry (USGS, 1988).

There are several issues which will most likely contribute to strong gold prices in the 1990s, though to what extent is unknown. First, the evolution toward more democratic rule in Eastern Bloc countries will likely play a role both in future demand and supply. Additionally, the creation of a unified European Community in 1992 that eliminates trade barriers between western European countries may also play a part. "Finally, the growth in the eastern European markets and speculation about a new monetary role for Soviet supplied gold will help stimulate a bull market." (E&MJ, March 1990).

The increasing price trend shown in Table A.3 is expected to continue, but at a slower pace. For the purposes of the analysis the price of gold is assumed to remain near, or somewhat above, about \$400 per troy ounce in 1990 dollars. Silver is assumed to remain between \$5 and \$7 per troy ounce in 1990 dollars.

Legislative Changes

There are several areas of legislative change that may affect how the hardrock mineral resources in the planning area are developed.

The first is the on going effort to amend, repeal, or reform the Mining Law of 1872. This could result in anything from simply leaving it as is, to a complete restructuring into a leasing/royalty system similar to that now used for coal or oil and gas. The effect of major changes in the mining law on mineral activity would be a decrease in the amount of exploration activity undertaken by small operators if the right of self initialization is lost. Another perhaps more extensive affect would be a decrease in the ultimate number and size of mines that could be developed. This is because a royalty on mineral production would generate a corresponding increase in operating costs which in turn would raise the cut-off ore grade making some currently economic deposits uneconomic, or reducing the size or minable depth of other deposits.

Changes in the way mining property and production is taxed could also have a substantial effect on the viability of individual operations. No changes in state tax schedules are anticipated. No federal royalty is assumed in this analysis.

Another area of possible legislative change is in environmental laws or regulations which would affect exploration and mining activity. There is an increased level of public awareness on environmental matters which is expected to continue into the future. This will result in stricter compliance and enforcement of existing regulations by state and federal agencies. New regulations are proposed by the Environmental Protection Agency that would regulate mining wastes under Subtitle D of the Resource Conservation and Recovery Act (RCRA). This new program is expected to go into effect sometime in the mid 1990s. This would increase mine permitting costs and operation. It also may cause some marginal operations to become uneconomic.

For purposes of analysis it is assumed that the mining law could be changed, but the right of self initialization will be maintained, and there will be no federal royalty system imposed. It is also assumed that permitting procedures and compliance requirements will be stricter in the future.

APPENDIX B

OIL AND GAS REASONABLY FORESEEABLE DEVELOPMENT SCENARIO

HISTORICAL ACTIVITY

Oil and gas production from the Sweet Grass Hills and surrounding area is primarily from Cretaceous and Mississippian age rocks. Although the existing fields are not large by comparison, they are relatively shallow and easy to produce. Such characteristics make these fields good exploration/development opportunities.

Within the 13 townships adjacent to West, East, and Middle Buttes are numerous oil and gas fields. These fields are identified in Table B.1. Cumulative production from these fields is in excess of 18,750,000 barrels of oil and 44,000,000,000 cubic feet of gas (Dwights Energy, 1994). This production has played an important role in the local economy. However, only a small percentage of the existing wells are within the study area.

Available information indicates that from January 1932 to November 1993, 66 wells have been drilled within the study area (Table 3.3). The oldest well was drilled in 1932 and the most recent in 1989. Of the 66 wells drilled, 62 have been drilled since 1960; 12 of which are classified as producing. Eighteen (18) of the remaining 56 non productive wells had shows of oil and/or gas. Table B.2 lists the productive wells within each of the three buttes along with their cumulative and estimated ultimate recoverable production. Specific information regarding each of the buttes is provided below.

West Butte Area

The West Butte area is the only one to have produced both oil and gas. Oil production is from the Swift formation and gas production is primarily from the Bow Island sands. There have been 17 wells drilled in this area, one producing gas well, one producing oil well, and four other wells that indicated shows of oil and/or gas.

Middle Butte Area

Production from this area is limited almost entirely to Bow Island gas. There have been 19 wells drilled with seven of those being producers. Four other wells had shows of oil and/or gas. Of significant importance is a 4,802 foot exploration well drilled in 1958. This is the only deep well to have been drilled in any of the three areas. Results of the drilling,

as reported by Petroleum Information, indicate that parts of this well were cored and that free oil was noted as occurring in the formation fractures in parts of the cores. Shows of oil were noted in multiple intervals including some Devonian age sediments.

East Butte Area

Production is limited to gas from the Sunburst formation. However, several tests did indicate the presence of oil, and one test recovered free oil during a Drill Stem Test. Later completion attempts were unsuccessful. Since 1932, 30 wells have been drilled, including the oldest well, resulting in three producing gas wells and an additional 10 wells with shows of gas and/or oil. In general, the Sunburst wells from this area are far more prolific than the Bow Island gas wells from the other two areas.

PRESENT ACTIVITY

Within the study area no new exploration or development drilling has occurred in the last three years. However, active exploration and development of federal and private oil and gas leases adjacent to the study area continues. To date, there has been virtually no exploration of the deeper Devonian age sediments.

Production as reported by the Montana Oil and Gas Statistical Bulletin for the 2nd quarter of 1993 was 50,596 BBL of oil and 479,259 MCF of gas for the Sweet Grass Hills and surrounding fields. Production from the three areas for the month of January 1993 was 6,731 MCF of gas versus 1,530 MCF for the month of May. The disparity in the production figures from January to May is most likely the result of seasonal production limitations imposed by the purchasers and reflects higher winter months demand.

The federal government receives all, or portions of the royalty paid for production from seven of the twelve producing wells in the study area. In addition, the government also receives royalty from federal minerals located in the E1/2 E1/2 of section 25, T36N, R2E through two federal communitization agreements (the wells are located outside the study area in the W1/2 E1/2 of section 25).

TABLE B.1

**MAJOR OIL AND GAS FIELDS IN LIBERTY AND
TOOLE COUNTIES**

County	Field	Discovery		
		Production	Date	
Liberty	Bear's Den	Gas, Oil	1924	
	Blackjack	Gas	1968	
	Flat Coulee	Gas, Oil	1933	
	Haystack Butte	Gas	1976	
	Laird Creek	Oil	1968	
	Middle Butte	Gas	1958	
	Mt. Lilly	Gas	1963	
	Sage Creek	Gas	1975	
	Snoose Coulee	Gas, Oil	1975	
	Trail Creek	Gas	1970	
	Whitlash	Gas, Oil	1918	
	Toole	Arch Apex	Gas, Oil	
		Fred & George Creek	Oil	1963
Kicking Horse		Gas, Oil	1973	
Little Phantom		Oil	1977	
Middle Butte		Gas	1958	
Miners Coulee		Oil	1966	
Miners Coulee Gas		Gas	1974	
Phantom		Gas, Oil	1976	
Phantom West		Gas	1978	
Prichard Creek		Oil	1967	
Trail Creek		Gas	1970	
West Butte Oil		Oil	1968	
West Butte Gas		Gas	1979	
West Butte Sour Gas		Gas	1968	
Whitlash		Gas, Oil	1918	

REASONABLY FORESEEABLE DEVELOPMENT ACTIVITY

Based on the level of past oil and gas activities, it is anticipated that 60 wells could be drilled within the study area over the next 15 to 20 years. The following is a brief description of the reasons used to project that level of activity. The number of wells drilled per year would not likely be at a constant level. The wells anticipated could very easily be drilled in two to three years should a new discovery be made, or should additional markets become available. It is predicted that more gas than oil wells would be drilled, but should a deeper oil reservoir be discovered, the converse is more likely.

OIL PRODUCTION

Oil exploration and development continues in the fields adjacent to the three buttes. However, the targeted formations are primarily Cretaceous and Mississippian age. Little or no exploration for deeper Devonian age production is occurring. As the average daily production declines to a level where it is no longer possible to produce oil and gas at a profit, the number of well pluggings is expected to increase. In addition to plugging, some of these existing wells are likely to be re-entered and deepened with expectations of encountering hydrocarbons in deeper sedimentary horizons. Also, as the level of production continues to decline over the life of the existing fields, operators will be inclined to drill for production to replace their depleting reserves. This will be necessary in order for the companies to continue to meet contractual obligations and remain in business. Further exploration will likely result in increased drilling for deeper production.

A small, but prolific Devonian aged field (Nisku formation) is located to the southwest of the Sweet Grass Hills. Occurrence of similar fields within the study area is considered high, based on the favorable geology, existence of source and reservoir rocks, and the high probability of structural and permeability traps associated with the laccolith intrusives. In addition, the only deep test within the study area did report very good oil shows through a number of deeper formations.

One of the major restraints to increased exploration for oil is the depressed price of oil. Based on price predictions from the Energy Information Administration, prices (in constant dollars) for oil are anticipated to climb, but at an average of only 1-2% per year over the next 10 years. However, because foreign reserves are steadily being depleted and domestic consumption continues to rise, we can expect oil prices to rise. The rate of exploration for oil will be in direct response to the price of oil and to the operators need to discover new reserves.

Although no large oil field discoveries are expected within the study areas, continued exploration is anticipated. Exploration of Cretaceous and Mississippian age rocks is likely to occur within the West and Middle Butte study areas. Deeper exploration could occur within any of the study areas.

Given a sudden increase in demand, a sharp increase in price, a shut-off of foreign supplies, or a new discovery, a large exploration or development program could occur very rapidly. Because the productive horizons are relatively shallow, it is possible that many or all of the predicted wells could be drilled in one year.

TABLE B.2

WELLS DRILLED IN THE STUDY AREA

Well Name	Legal Location	Depth	Status	Year Drilled	Cumulative Production	Ultimate Recovery
West Butte Area						
13-5 Clark-Beaudoin	T.37N., R.2E., Sec. 5, SE1/4SW1/4	2615	OSI	1968	42189 BBL	42632 BBL
41-29 J Fey	T.37N., R.2E., Sec. 29, NE1/4NE1/4	2321	PGW	1978	35999 MCF	38505 MCF
Middle Butte Area						
44-23 Parsell	T.36N., R.2E., Sec. 23, SE1/4SE1/4	3033	PGW	1976	121859 MCF	129627 MCF
11-24 Christian	T.36N., R.2E., Sec. 24, NW1/4NW1/4	3038	GSI	1977	11625 MCF	22653 MCF
23-24 Christian	T.36N., R.2E., Sec. 24, NE1/4SW1/4	2103	PGW	1977	72059 MCF	94453 MCF
44-24 Christian	T.36N., R.2E., Sec. 24, SE1/4SE1/4	1915	PGW	1988	51789 MCF	60275 MCF
4-7 Fey-J	T.36N., R.3E., Sec. 7, NW1/4NW1/4	2975	PGW	1976	31667 MCF	59405 MCF
11 Parsell	T.36N., R.3E., Sec. 9, NW1/4NW1/4	3081	PGW	1965	4435 MCF	6081 MCF
14-30 R Parsell	T.36N., R.3E., Sec. 30, NE1/4SW1/4	3200	PGW	1981	16797 MCF	33227 MCF
East Butte Area						
3-1 Federal	T.36N., R.5E., Sec. 3, NE1/4NE1/4	2202	PGW	1969	267479 MCF	321999 MCF
4 Dafoe Gaines	T.36N., R.5E., Sec. 3, SE1/4SE1/4	1668	PGW	1969	276823 MCF	448576 MCF
2 Dafoe-Gaines	T.36N., R.5E., Sec. 10, NE1/4NE1/4	1654	PGW	1968	267232 MCF	498005 MCF

GAS PRODUCTION

Future exploration would most probably occur, as in the past, along the margins of existing fields as stepout wells. These exploratory wells will better delineate the boundaries of existing fields and would probably result in the discovery of several new fields over the next two decades. These new discoveries should be comparable in depth, size, reserves, and areal extent as existing fields in the area. Development wells would continue to be drilled in existing fields to satisfy contract quotas, as existing individual well production declines due to depletion, and as a result of spacing changes.

One of the major restraints to increased exploration is the lack of market for produced gas from this area. This is in a great part due to the lack of a transportation network to needy markets. As a result, most companies generally will not intensively or diligently drill an area upon discovering gas until such time as the necessary transportation network is established and a market is located. Despite the lack of market, the price of gas (in constant dollars) is expected to increase at about 3.5% per year until the year 2010. The demand for natural gas is also estimated to grow much more rapidly than oil. This is in part due to the more favorable

environmental properties of burning natural gas versus coal, oil, or wood.

Because most of the existing production from the study area is natural gas, it is anticipated that future drilling activities would be primarily for new gas reserves. Deeper gas production is likely based on the favorable geologic conditions as described in the oil production section. The East Butte area contains the most prolific gas wells. Accordingly, the majority of new wells are anticipated to be drilled within this area, based on past activity it is not unlikely that 30 wells could be drilled in this area over the next 15 to 20 years. Interest in exploring for gas in the West Butte Area was expressed in early 1994, but to date no wells have been drilled. If a discovery were to occur in either of these areas it is possible that a localized, intensive drilling program could be undertaken. However, based on current spacing patterns for the existing wells, no more than 4 wells per section are anticipated.

Given a sudden increase in the demand for natural gas, a sharp increase in price, increased market access, or a new discovery, a large exploration or development program could occur very rapidly. Because the productive horizons are relatively shallow, it is possible that all of the predicted wells could be drilled in one to two years.

ATTACHMENT B.1
OIL AND GAS LEASE STANDARD STIPULATIONS

UNITED STATES DEPARTMENT OF THE INTERIOR
Bureau of Land Management

(Serial Number)

OIL AND GAS LEASE STIPULATIONS

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

1. Contact the appropriate SMA to determine if a site specific cultural resource inventory is required. If an inventory is required, then;
2. Engage the services of a cultural resource specialist acceptable to the SMA to conduct a cultural resource inventory of the area of proposed surface disturbance. The operator may elect to inventory an area larger than the area of proposed disturbance to cover possible site relocation which may result from environmental or other considerations. An acceptable inventory report is to be submitted to the SMA for review and approval no later than that time when an otherwise complete application for approval of drilling or subsequent surface disturbing operation is submitted.
3. Implement mitigation measures required by the SMA. Mitigation may include the relocation of proposed lease-related activities or other protective measures such as testing salvage and recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the SMA, surface occupancy on that area must be prohibited.

The lessee or operator shall immediately bring to the attention of the SMA any cultural or paleontological resources discovered as a result of approved operations under this lease, and not disturb such discoveries until directed to proceed by the SMA.

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

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

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

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

CONTROLLED OR LIMITED SURFACE USE STIPULATION—This stipulation may be modified by special stipulations which are hereto attached or when specifically approved in writing by the Bureau of Land Management with concurrence of the SMA. Distances and/or time periods may be made less restrictive depending on the actual onground conditions. The prospective lessee should contact the SMA for more specific locations and information regarding the restrictive nature of this stipulation.

(Continued on Reverse)

MT-3109-1 (June 1983)

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

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

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

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

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

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

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

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

(Date)

(Signature)

**ATTACHMENT B.2
OIL AND GAS LEASE RAPTOR STIPULATION**

Following are general recommended nest buffer zones related to various human activities. These recommended zones are not inclusive; details in terrain, vegetation, type and duration and familiarity of disturbances, specific temperament of individual birds, phase of nesting cycle, etc., all enter into determining the actual needed buffer zone at a given nest site. Preclusion of human activity at a given nest territory should be tempered with as many variables as possible and on a site specific basis.

Activity	Recommended Buffer Zones
Off-road vehicle use	1/4 mile - 1/2 mile
Camping	1/4 mile - 1/2 mile
Hiking	1/4 mile - 1/2 mile
Road construction	1/2 mile - 1 mile
Building/construction	1/2 mile - 3 miles
Mining/heavy equipment or blasting	1 mile - 3 miles
Aircraft flights (low altitude)	1/4 mile - 1 mile

Approximate nesting dates for some raptors that occur in the West Hilline area.

Species	Approximate Dates of Nesting Season
Turkey Vulture	April 15 - August 1
Golden Eagle*	February 1 - July 30
Bald Eagle**	February 15 - August 15
Northern Harrier	April 1 - July 15
Sharp-Shinned Hawk	April 15 - August 15
Coopers Hawk*	April 15 - August 15
Northern Goshawk*	April 15 - August 15
Red-tailed Hawk	April 15 - August 15
Swainson's Hawk	May 1 - September 15
Ferruginous Hawk*	April 1 - July 30
American Kestrel	May 1 - August 15
Merlin*	April 15 - August 15
Prairie Falcon*	March 15 - July 30
Peregrine Falcon**	April 15 - August 1
Short-eared Owl	March 1 - August 1
Long-eared Owl	March 1 - August 1
Great-horned Owl	January 1 - August 1
Great gray Owl	March 1 - August 15
Eastern Screech Owl	March 1 - July 1
Northern pygmy Owl	March 1 - July 15
Northern Saw-whet Owl*	March 1 - August 30
Burrowing Owl*	March 15 - July 15

*Species of special interest or concern

**Federally listed Species

APPENDIX C

WITHDRAWAL REQUIREMENTS

This appendix includes the requirements to process the proposed withdrawal for the Sweet Grass Hills as defined in 43 CFR Part 2300 Subpart 2310.3-2 (development and processing of the case file for submission to the Secretary). This appendix along with the amendment and environmental impact statement (EIS) would become part of the withdrawal application. The legal description of the lands involved under the preferred alternative are shown in Attachment C.1.

Present Users of the Lands Involved (43 CFR 2310.3-2(b)(1))

The present users of the lands involved are shown in Attachment C.2. This includes right-of-ways, grazing lessees, mining claim holders, oil and gas lessees, and withdrawals. Table C.1 summarizes the affects of the proposed

withdrawal on these users based on the analysis in this amendment/EIS. The withdrawal would exclude the filing of new mining claims. Current valid existing mining claims would not be affected.

Use of Water (43 CFR 2310.3-2(b)(2))

The use of water will not be necessary to fulfill the purposes of the proposed withdrawal for the Sweet Grass Hills.

Environmental Impact Statement (43 CFR 2310.3-2(b)(3))

This amendment/EIS meets the requirements of the National Environmental Policy Act for the proposed with-

TABLE C.1

SUMMARY OF AFFECTS OF THE WITHDRAWAL ON USERS

Users	Alternative A	Alternative B	Alternative C	Alternative D
Right-Of-Way Holders	Not Affected	Not Affected	Not Affected	Not Affected
Grazing Lessees	Not Affected	Not Affected	Not Affected	Not Affected
Mining Claim Holders	Not Affected	Affected, See Appendix A and Chapter 4, Locatable Minerals	Affected, See Appendix A and Chapter 4, Locatable Minerals	Affected, See Appendix A and Chapter 4, Locatable Minerals
Oil/Gas Lessees	Not Affected	Not Affected	Not Affected	Not Affected
Withdrawals				
*Reclamation	Not Affected	Affected, See Chapter 4, Lands	Affected, See Chapter 4, Lands	Affected, See Chapter 4, Lands
*International Boundary	Not Affected	Not Affected	Not Affected	Not Affected

drawal for the Sweet Grass Hills. The following items are included in the appropriate section of this amendment/EIS or are included in this appendix.

Identification of Cultural Resources (43 CFR 2310.3-2(b)(3)(i))

Results of the consultation process with the Advisory Council on Historic Preservation for the proposed withdrawal are shown in Attachments C.3, C.4, and C.5.

Identification of Roadless Areas (43 CFR 2310.3-2(b)(3)(ii))

The public lands covered by the proposed withdrawal for the Sweet Grass Hills did not qualify as roadless areas in inventories conducted by Bureau of Land Management (BLM) personnel for wilderness characteristics in 1978 and 1979 as mandated in Section 603 of the Federal Land Policy and Management Act (FLPMA). These BLM administered lands were dropped from further wilderness consideration in a decision issued by Montana State Director, Ed Zaidlicz, during the month of August, 1979. The public document with an accompanying map that lists this decision is titled: Montana Initial Wilderness Inventory - Final Decision - August 1979.

Mineral Resource Analysis (43 CFR 2310.3-2(b)(3)(iii))

A mineral report was completed and is available for review in the Great Falls Resource Area Office, Great Falls, Montana. All of the locatable minerals on Federal lands in West and Middle Buttes within the Sweet Grass Hills ACEC have high occurrence potential; locatable minerals in the central portion of East Butte have high occurrence potential; and locatable minerals in the lower elevations have moderate to low occurrence potential. Prior to the August 3, 1993, segregation there were approximately 270 unpatented mining claims in this area. Presently, there are 20 unpatented mining claims on record. Fourteen of the claims are located on East Butte and the remaining six are located on Middle Butte. The withdrawal would be subject to valid existing rights. The BLM conducted a validity exam of existing claims in the East Butte area. The results indicate eight of the claims meet the test of discovery under the mining law and are valid.

The withdrawal would not apply to Federal leasable or saleable minerals both of which have been developed in the area. Oil and gas leasing is addressed in the amendment/EIS. All oil and gas minerals are prospectively valuable. The occurrence potential varies from moderate to high. There are thin coal deposits in and around all three buttes.

The occurrence potential is high but is limited in its areal extent. Saleable mineral deposits of sand and gravel and rip rap occur throughout the area, but the only active pits are located on private land. A Bureau of Reclamation withdrawal for use of rip rap material has been in effect since 1955.

Biological Assessment (43 CFR 2310.3-2(b)(3)(iv))

Attachment C.6 is the letter from the U.S. Fish and Wildlife Service (USFWS) to Richard Hopkins, Great Falls Area Manager, (11/19/93) listing the Threatened and Endangered species for the study area covered by this amendment/EIS. Attachment C.7 is a "no effect" determination by the BLM and suffices as the biological assessment for this amendment/EIS. This letter along with a copy of the draft amendment/EIS was forwarded to the USFWS and fulfills the requirements of Section 7 of the Endangered Species Act. The response from the USFWS is Attachment C.8.

Economic Analysis (43 CFR 2310.3-2(b)(3)(v))

An analysis of the economic impact of the proposed withdrawal is included in Chapter 4, Environmental Consequences, of this amendment/EIS.

Public Participation (43 CFR 2310.3-2(b)(3)(vi))

Chapter 5, Consultation and Coordination, of this amendment/EIS describes the public participation in the environmental review process.

Supporting Data (43 CFR 2310.3-2(b)(4))

Floodplains or Wetlands (43 CFR 2310.3-2(b)(4)(i))

All the streams on public lands within the study area are first and second order (as determined by a 1:24,000 scale topographic map) and exhibit ephemeral or intermittent flows. Floodplains and wetlands are not generally significant on these stream classes. Therefore, the existing and proposed actions will comply with the provisions of E.O. 11988 and 11990 of May 24, 1977 (42 FR 26951; 26961).

Consultation (43 CFR 2310.3-2(b)(5))

Chapter 5, Consultation and Coordination, of this amendment/EIS describes the consultation with other Federal agencies, State and local government, individuals, and nongovernmental groups regarding the proposed withdrawal for the Sweet Grass Hills.

ATTACHMENT C.1
LEGAL DESCRIPTION OF THE LANDS INVOLVED UNDER THE PREFERRED ALTERNATIVE

T. 37 N.,R. 1 E., PMM., Toole County	
sec. 1, lots 5 to 8, inclusive;	70.49
sec. 2, lots 5 and 6, and S1/2SE1/4;	115.00
sec. 11, E1/2E1/2;	160.00
sec. 12, lots 1 to 8, inclusive, and S1/2N1/2;	478.28
sec. 13, lots 1 to 5, inclusive, W1/2NE1/4, NW1/4, N1/2SW1/4, SE1/4SW1/4, and W1/2SE1/4;	628.79
sec. 14, lots 1 to 3, inclusive, N1/2, SW1/4, and N1/2SE1/4;	609.28
sec. 15, E1/2E1/2;	160.00
sec. 22, E1/2NE1/4;	80.00
sec. 23, lot 1, E1/2NE1/4, SW1/4NE1/4, NW1/4, S1/2SW1/4, and SE1/4;	559.30
sec. 24, lots 1 to 4, inclusive, W1/2E1/2, and W1/2;	635.36
sec. 25, lots 1 to 10, inclusive, SW1/4NE1/4, S1/2NW1/4, N1/2SW1/4, NW1/4SE1/4;	632.71
sec. 26, E1/2NE1/4, N1/2NW1/4, and S1/2;	480.00
sec. 27, NE1/4NE1/4, S1/2NW1/4, NE1/2SW1/4, and NW1/2SE1/4;	200.00
sec. 34, NE1/4NE1/4;	40.00
sec. 35, NE1/4, E1/2NW1/4, and SW1/2NW1/4;	280.00
T. 36 N.,R. 2 E., PMM., Toole County	
sec. 5, lot 4;	39.11
sec. 6, lots 1 and 2, and SW1/4NE1/4;	118.41
sec. 13, N1/2NW1/4	80.00
sec. 23, E1/2NE1/4 and N1/2SE1/4;	160.00
sec. 24, SW1/4NW1/4 and W1/2SW1/4;	120.00
sec. 25, SE1/4NE1/4 and E1/2SE1/4.	120.00
T. 37 N.,R. 2 E., PMM., Toole County	
sec. 5, lot 8;	1.82
sec. 6, lots 6, 7, 8, 9, and 10;	46.93
sec. 7, lots 1 to 4, inclusive, and E1/2SW1/4;	238.60
sec. 17, W1/2SW1/4;	80.00
sec. 18, SW1/4NE1/4, E1/2SE1/4, and NW1/4SE1/4;	160.00
sec. 19, lots 2, 3, and 4, NE1/4NE1/4, SE1/4NW1/4, and NE1/4SW1/4;	239.99
sec. 20 NW1/4NE1/4 and N1/2NW1/4;	120.00
sec. 30, lots 1 to 4, inclusive, S1/2NE1/4, SE1/4NW1/4, E1/2SW1/4, and SE1/4;	520.88
sec. 31, lots 1, 2, and 3, NE1/4, E1/2NW1/4, NE1/4SW1/4, and N1/2SE1/4;	480.75
T. 35 N.,R. 3 E., PMM., Toole County	
sec. 3, lot 4 and SW1/4NW1/4;	80.17
sec. 4, lots 1 and 2, S1/2NE1/4.	160.29
T. 36 N.,R. 3 E., PMM., Toole County	
sec. 7, lot 2, SW1/4NE1/4, SE1/4NW1/4, E1/2SW1/4, and NW1/4SE1/4;	232.24
sec. 9, NE1/4SW1/4 and SE1/4SE1/4;	80.00
sec. 10, S1/2SW1/4 and SW1/4SE1/4;	120.00
sec. 11, NW1/4SW1/4;	40.00
sec. 15, NW1/4, W1/2SW1/4, and SE1/4SW1/4;	280.00
sec. 17, lots 1 and 2, E1/2SW1/4, and SE1/4;	317.06
sec. 18, lots 5, 6, 11, and 12, and NW1/4NE1/4;	96.58
sec. 19, lots 3 and 4, E1/2SW1/4, and S1/2SE1/4;	224.55
sec. 20 E1/2NE1/4, NW1/4NE1/4, NE1/4NW1/4, W1/2SW1/4, and SE1/4SW1/4;	280.00
sec. 21, NE1/4, N1/2NW1/4, and S1/2SW1/4;	320.00
sec. 22, NW1/4;	160.00
sec. 28, W1/2NE1/4, E1/2NW1/4, NW1/4NW1/4, and SW1/4SW1/4;	240.00
sec. 29, W1/2NE1/4, W1/2, and SE1/4;	560.00
sec. 30, lots 1 and 2, N1/2NE1/4, SW1/4NE1/4, E1/2NW1/4, and SE1/4SE1/4;	304.49

sec. 31, lots 2 and 3, NE1/4NE1/4, and SW1/4SE1/4;	145.90
sec. 32, N1/2N1/2, SE1/4NE1/4, SW1/4, W1/2SE1/4, and SE1/4SE1/4;	480.00
sec. 33, S1/2NE1/4, N1/2SE1/4, and SE1/4SE1/4;	200.00
sec. 34, NW1/4NE1/4, N1/2NW1/4, and SW1/4SW1/4.	160.00
 T. 35 N.,R. 4 E., PMM., Liberty County	
sec. 2, lot 2, SW1/4NE1/4, E1/2SW1/4, and NW1/4SE1/4.	199.86
 T. 36 N.,R. 4 E., PMM., Liberty County	
sec. 1, lots 1, 2, and 3, S1/2NE1/4, and NE1/4SE1/4;	240.08
sec. 9, SE1/4;	160.00
sec. 10, lots 3 and 4, and E1/2SW1/4;	165.61
sec. 24, lots 1 to 4, inclusive, N1/2NE1/4, SW1/4NE1/4, and NW1/4NW1/4;	302.65
sec. 25, lots 1 to 6, inclusive, NE1/4, SE1/4NW1/4, and N1/2SW1/4;	441.45
sec. 26, SE1/4NE1/4, E1/2SE1/4, and SW1/4SE1/4;	160.00
sec. 34, E1/2NE1/4 and SW1/4NE1/4;	120.00
sec. 35, E1/2NE1/4;	80.00
sec. 36, lots 1, 2, 3, and 5.	125.55
 T. 37 N.,R. 4 E., PMM., Liberty County	
sec. 34, N1/2N1/2 and SW1/4NE1/4;	200.00
sec. 35, NW1/4NW1/4.	40.00
 T. 35 N.,R. 5 E., PMM., Liberty County	
sec. 5, lot 4, SW1/4NW1/4, and NE1/4SW1/4;	119.87
sec. 6, lots 1, 2 and 5, and SW1/4NE1/4.	156.29
 T. 36 N.,R. 5 E., PMM., Liberty County	
sec. 3, lot 1 and NE1/4SE1/4;	81.38
sec. 4, W1/2SW1/4;	80.00
sec. 5, SW1/4SW1/4;	40.00
sec. 6, lot 6, NE1/4SW1/4, and SE1/4SE1/4;	117.15
sec. 7, lot 1, N1/2NE1/4, and NE1/4NW1/4;	156.93
sec. 8, E1/2NE1/4, NW1/4NE1/4, and W1/2NW1/4;	200.00
sec. 9, NW1/4NW1/4;	40.00
sec. 14, S1/2SW1/4;	80.00
sec. 18, N1/2NE1/4;	80.00
sec. 19, lots 1 to 9, inclusive, N1/2NE1/4, NE1/4NW1/4, SE1/4SW1/4, and SW1/4SE1/4;	454.73
sec. 20 lots 1 to 5, inclusive, N1/2, N1/2SE1/4;	472.25
sec. 21, N1/2N1/2, SE1/4NE1/4, N1/2SW1/4, and SE1/4SE1/4;	320.00
sec. 22, W1/2NW1/4, and E1/2SE1/4;	160.00
sec. 23, W1/2NE1/4, SE1/4NE1/4, NE1/4NW1/4, S1/2SW1/4, and SW1/4SE1/4;	280.00
sec. 26, NW1/4NW1/4;	40.00
sec. 27, W1/2W1/2, SE1/4SW1/4, and SW1/4SE1/4;	240.00
sec. 28, SE1/4NE1/4 and SE1/4;	200.00
sec. 29, lots 1, 2, 3, 4, 5, 7, 8, 9, and 10, SW1/4NW1/4, N1/2SW1/4, and SW1/4SW1/4;	416.42
sec. 30, lots 1 to 4, inclusive, E1/2, and E1/2W1/2;	624.80
sec. 31, lots 1, 2, 3, and 4, inclusive, MS 3418, E1/2, NE1/4NW1/4, and SE1/4SW1/4;	589.31
sec. 32, lots 1 to 5, inclusive, E1/2NE1/4, SW1/4NE1/4;	283.43
sec. 34, N1/2NE1/4.	80.00
 T. 37 N.,R. 5 E., PMM., Liberty County	
sec. 29, SE1/4SE1/4;	40.00
sec. 30, SE1/4SW1/4.	40.00
 Total	19,764.74

**ATTACHMENT C.2
PRESENT USERS OF THE LANDS INVOLVED**

1) Right-Of-Ways

Communication Site - Holder and Case No.

Alme Construction, Inc.
PO Box 293
Cut Bank, MT 59427
MTM-46305

Burlington Northern Railroad
Supervisor, Communications
235 Main Street
Havre, MT 59501
MTM-16816

John A. Devine
Highline Communications
North 202 Central Avenue, PO Box 205
Cut Bank, MT 59427
MTM-38433

East Butte TV Club
c/o Joyce Grinde
303 Fifth Street North
Shelby, MT 59474
MTM-039674

Fulton Producing Company
PO Box 603
Shelby, MT 59474
MTM-32856

General Well Services, inc.
PO Box 308
Cut Bank, MT 59427
MTM-22560

AIRCALL, Inc.
814 Fifth St. South
PO Box 2248
Great Falls, MT 59403
MTM-21456

TCI Microwave, Inc.
PO Box 1698
Havre, MT 59501
MTM-071432

Phillip Saxton
KRTV (MTN)
PO Box 1331
Great Falls, MT 59403
MTM-48514

Marias River Electric Coop
PO Box 729
Shelby, MT 59474
MTM-019684

Ken Anderson
Montana Highway Department
PO Box 1359
Great Falls, MT 59403
MTM-09145

Motorola Communications and Electronics, Inc.
Antenna Site Department
20 Inverness Place East
Englewood, CO 80112
MTM-32855

Mount Royal Repeater Assoc.
c/o Dean Gebhardt
1227 Lincoln Avenue
Havre, MT 59501
MTM-013478

Ralph's Radio & Electronics
Ferry Star Route, Box 827
Big Sandy, MT 59520
MTM-60023

Lyle Steever
856 North Teton Avenue
Shelby, MT 59474
MTM-57081

Toole County
Toole County Courthouse
Shelby, MT 59474
MTM-32858

Pondera County
Pondera County Courthouse
20 4th Avenue SW
Conrad, MT 59425

Lloyd Torgerson, Inc. M-51649
c/o Eric Torgerson
PO Box 278
Ethridge, MT 59435

Powerline

Case No. MTM-57790
 Marias River Electric Cooperative
 P.O. Box 729
 Shelby, MT 59474

Reservoir, Ditches and Canal

Case No. MTM-040430
 R.L. McCulloh, Whitlash, MT 59545
 J.T. Mills, Jr., Whitlash, MT 59545
 Ira Myers, Whitlash, MT 59545

2) Grazing Lessees

Lessee	Allotment No.	Lease No.
Joe Brown	6394	1865
Steve Christian	6392	1884
Chris Kostad	6305	1884
Walter C. Clark	6389	1885
Doug Demarest	6293	1889
Anderson Schultz	6391	1891
Henry McDermott	6377	1913
Meissner Ranches	6395	1866
Annie O'Laughlin	6388	1919
Lloyd Oswood	6397	1870
Robert W. Parsall	6492	1927

3) Mining Claim Holders

See Appendix A, Table A.2, Mining Claims in the Study Area

4) Oil & Gas Lessees

Texaco Exploration & Production
 Box 2100
 Denver, CO 80201
 Lease No. MTM-78702, MTM-78703, MTM-78706, MTM-78705,
 MTM-78701, MTM-82340, MTM-80300, MTM-82341

Robert G. Armstrong
 Box 1973
 Roswell, NM 88202
 Lease No. MTM-75483

Lyon Oil
 2077 Mission Tr.
 Kalispell, MT 59901
 Lease No. MTM-10443

Julie Morton
 1501 Eagle Dr.
 Kalispell, MT 59901

Northstar Res.
 2077 Mission Tr.
 Kalispell, MT 59901

FINA Oil & Chemical
 Box 2159
 Dallas, TX 75221
 Lease No. MTM-49009

Marathon Oil C.
 Box 3128
 Houston, TX 77253

Petrofina Delaware
 1 Houston CTR #1200
 Houston, TX 77010

Mary P. Anderson
 Drawer 2475
 Midland, TX 79702
 Lease No. MTM-1631

John B. Appling
 Drawer 2475
 Midland, TX 79702

Lawrence J. McCarthy
 Box 69
 Plains, MT 59859

Celeste C. Grynberg
 5000 S. Quebec #500
 Denver, CO 80237
 Lease No. MTM-58107

Quantum Co.
P.O. Drawer D
Shelby, MT 59474
Lease No. MTM-75457

CNR Res. Inc.
333 Clay St. #4940
Houston, TX 77002
Lease No. MTM-14941

J. Norsworthy
Box 154
Billings, MT 59103
Lease No. MTM-067293

Fulton Fuel Co.
1512 Larimer St.
Denver, CO 80202
Lease No. MTM-27055

Tenneco Oil Co.
Box 800
Denver, CO 80201
Lease No. MTM-25428

Western Expl. LTD
1512 Larimer #400
Denver, CO 80202
Lease No. MTM-24279-A, MTM-14308

Fulton Producing Co.
1600 Broadway #1100
Denver, CO 80202
Lease No. MTM-24279

James R. Gorson
1600 S. Eads #109-S
Arlington, VA 22202
Lease No. MTM-77591

Yates Perto. Corp.
105 S 4th Street
Artesia, NM 88210
Lease No. MTM-25251

Herman L. Wessel
Box 957
Billings, MT 59103
Lease No. MTM-74325

Fulton Fuel Co.
1512 Larimer Street
Denver, CO 80202
Lease No. MTM-77006

Sands Oil Co.
Box 373
Billings, MT 59103

James W. Raven
Box 154
Billings, MT 59103

Mountain Oil & Gas
6610 Rockledge 450
Bethesda, MD 20817

Sands Oil Co.
Box 373
Billings, MT 59103

Western Expl LTD
1512 Larimer #400
Denver, CO 80202

Fulton Fuel Co.
1512 Larimer St.
Denver, CO 80202

Texaco Inc.
Box 2100
Denver, CO 80201
Lease No. MTM-78572

Fulton Fuel Co.
1512 Larimer Street
Denver, CO 80202
Lease No. MTM-49504

Yellowstone Petro
Box 1148
Red Lodge, MT 5906

5) Withdrawals

Bureau of Reclamation
P.O. Box 30137
Billings, Montana 59107

International Boundary Commission
United States and Canada
1250 23rd Street, NW., Suite 405
Washington, D.C. 20037

ATTACHMENT C.3



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Lewistown District Office

Airport Road

P.O. Box 1160

Lewistown, Montana 59457-1160



IN REPLY REFER TO:

8140.1P

February 24, 1995

Montana State Historic Preservation Office
Attn. Marcella Sherfy
1402 8th Avenue
P.O. Box 201202
Helena, MT 59620-1202

Dear Ms. Sherfy:

Pursuant to our discussion of February 21, 1995, we wish to clarify that we consider the Sweet Grass Hills eligible for the National Register of Historic Places. We believe the hills qualify as a Traditional Cultural Property District eligible under criterion "a" for their association with broad patterns of tribal history, with contributing elements additionally eligible under criteria "b" and "d" as defined at 36CFR60.4.

In a letter dated January 29, 1993, the Keeper of the National Register recommended additional consultation with interested American Indian tribal groups, along with your office, to develop a boundary that addresses the archaeological and traditional cultural properties in the Sweet Grass Hills. Hopefully, further consultation will in fact, result in a boundary definition which meets the requirements of the Keeper of the Register.

In the interim, we seek your concurrence of the eligibility of the Sweet Grass Hills District under criterion "a" with contributing properties additionally eligible under criteria "b" and "d." The boundaries we suggest include elevations above 1,400 meters for West Butte, 1,300 meters for Middle Butte, 1,300 meters for the northern portion of East Butte and 1,400 meters for the southern portion of East Butte as defined in the draft nomination by Chere Jiusto and Dave Schwab dated May, 1992.

At this time, we also seek your concurrence in a determination of "no adverse effect" pursuant to 36CFR800.5(d)(i) for a mineral withdrawal. Specifically, we request your concurrence that the withdrawal of federal locatable minerals within this proposed historic district will have no adverse effect on historic properties. As indicated in the earlier discussion, we consider this area eligible to the National Register for its association with tribal history. We further believe that withdrawal from mineral entry would, if anything, have a positive effect on historic values. Valid existing rights would not be subject to the proposed withdrawal.

The legal description for this undertaking follows.

PROPOSED LOCATABLE MINERAL WITHDRAWAL

T. 37 N., R. 1 E.,

- sec. 1, lots 5 to 8, inclusive; 70.49
 - sec. 2, lots 5, and 6, and S $\frac{1}{2}$ SE $\frac{1}{4}$; 115.00
 - sec. 11, E $\frac{1}{2}$ E $\frac{1}{4}$; 160.00
 - sec. 12, lots 1 to 8, inclusive and S $\frac{1}{2}$ N $\frac{1}{2}$; 478.28
 - sec. 13, lots 1 to 5, inclusive W $\frac{1}{2}$ NE $\frac{1}{4}$, NW $\frac{1}{4}$, N $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$ SW $\frac{1}{4}$, and W $\frac{1}{2}$ SE $\frac{1}{4}$; 628.79
 - sec. 14, lots 1 to 3, inclusive N $\frac{1}{2}$, SW $\frac{1}{4}$, and N $\frac{1}{2}$ SE $\frac{1}{4}$; 609.28
 - sec. 15, E $\frac{1}{2}$ E $\frac{1}{4}$; 160.00
 - sec. 22, E $\frac{1}{2}$ NE $\frac{1}{4}$; 80.00
 - sec. 23, lot 1, E $\frac{1}{2}$ NE $\frac{1}{4}$, SW $\frac{1}{4}$ NE $\frac{1}{4}$, NW $\frac{1}{4}$, S $\frac{1}{2}$ SW $\frac{1}{4}$, and SE $\frac{1}{4}$; 559.30
 - sec. 24, lots 1 to 4, inclusive W $\frac{1}{2}$ E $\frac{1}{4}$, and W $\frac{1}{2}$; 635.36
 - sec. 25, lots 1 to 10, inclusive SW $\frac{1}{4}$ NE $\frac{1}{4}$, S $\frac{1}{2}$ NW $\frac{1}{4}$, N $\frac{1}{2}$ SW $\frac{1}{4}$, NW $\frac{1}{4}$ SE $\frac{1}{4}$; 632.71
 - sec. 26, E $\frac{1}{2}$ NE $\frac{1}{4}$, N $\frac{1}{2}$ NW $\frac{1}{4}$, and S $\frac{1}{2}$; 480.00
 - sec. 27, NE $\frac{1}{4}$ NE $\frac{1}{4}$, S $\frac{1}{2}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$, and NW $\frac{1}{4}$ SE $\frac{1}{4}$; 200.00
 - sec. 34, NE $\frac{1}{4}$ NE $\frac{1}{4}$; 40.00
 - sec. 35, NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$, and SW $\frac{1}{4}$ NW $\frac{1}{4}$; 280.00
- 5,129.21

T. 36 N., R. 2 E.,

- sec. 5, lot 4; 39.11
 - sec. 6, lots 1, and 2, and SW $\frac{1}{4}$ NE $\frac{1}{4}$; 118.41
 - sec. 13, N $\frac{1}{2}$ NW $\frac{1}{4}$; 80.00
 - sec. 23, E $\frac{1}{2}$ NE $\frac{1}{4}$, and N $\frac{1}{2}$ SE $\frac{1}{4}$; 160.00
 - sec. 24, SW $\frac{1}{4}$ NW $\frac{1}{4}$, and W $\frac{1}{2}$ SW $\frac{1}{4}$; 120.00
 - sec. 25, SE $\frac{1}{4}$ NE $\frac{1}{4}$, and E $\frac{1}{2}$ SE $\frac{1}{4}$; 120.00
- 637.52

T. 37 N., R. 2 E.,

- sec. 5, lots 8; 1.82
 - sec. 6, lots 6, 7, 8, 9, and 10; 46.93
 - sec. 7, lots 1 to 4, inclusive and E $\frac{1}{2}$ SW $\frac{1}{4}$; 238.60
 - sec. 17, W $\frac{1}{2}$ SW $\frac{1}{4}$; 80.00
 - sec. 18, SW $\frac{1}{4}$ NE $\frac{1}{4}$, E $\frac{1}{2}$ SE $\frac{1}{4}$, and NW $\frac{1}{4}$ SE $\frac{1}{4}$; 160.00
 - sec. 19, lots 2, 3, and 4, NE $\frac{1}{4}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, and NE $\frac{1}{4}$ SW $\frac{1}{4}$; 239.99
 - sec. 20, NW $\frac{1}{4}$ NE $\frac{1}{4}$, and N $\frac{1}{2}$ NW $\frac{1}{4}$; 120.00
 - sec. 30, lots 1 to 4, inclusive S $\frac{1}{2}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, and SE $\frac{1}{4}$; 520.88
 - sec. 31, lots 1, 2, and 3, NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$, and N $\frac{1}{2}$ SE $\frac{1}{4}$; 480.75
- 1,888.97

T. 35 N., R. 3 E.,

- sec. 3, lot 4, and SW $\frac{1}{4}$ NW $\frac{1}{4}$; 80.17
 - sec. 4, lots 1 and 2, S $\frac{1}{2}$ NE $\frac{1}{4}$; 160.29
- 240.46

T. 36 N., R. 3 E.,

- sec. 7, lot 2, SW $\frac{1}{4}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, and NW $\frac{1}{4}$ SE $\frac{1}{4}$; 232.24
- sec. 9, NE $\frac{1}{4}$ SW $\frac{1}{4}$, and SE $\frac{1}{4}$ SE $\frac{1}{4}$; 80.00
- sec. 10, S $\frac{1}{2}$ SW $\frac{1}{4}$, and SW $\frac{1}{4}$ SE $\frac{1}{4}$; 120.00
- sec. 11, NW $\frac{1}{4}$ SW $\frac{1}{4}$; 40.00
- sec. 15, NW $\frac{1}{4}$, W $\frac{1}{2}$ SW $\frac{1}{4}$, and SE $\frac{1}{4}$ SW $\frac{1}{4}$; 280.00

sec. 17, lots 1 and 2, E $\frac{1}{2}$ SW $\frac{1}{4}$, and SE $\frac{1}{4}$; 317.06
 sec. 18, lots 5, 6, 11, and 12, and NW $\frac{1}{4}$ NE $\frac{1}{4}$; 96.58
 sec. 19, lots 3, and 4, E $\frac{1}{2}$ SW $\frac{1}{4}$, and S $\frac{1}{2}$ SE $\frac{1}{4}$; 224.55
 sec. 20 E $\frac{1}{2}$ NE $\frac{1}{4}$, NW $\frac{1}{4}$ NE $\frac{1}{4}$, NE $\frac{1}{4}$ NW $\frac{1}{4}$, W $\frac{1}{2}$ SW $\frac{1}{4}$, and SE $\frac{1}{4}$ SW $\frac{1}{4}$; 280.00
 sec. 21, NE $\frac{1}{4}$, N $\frac{1}{2}$ NW $\frac{1}{4}$, and S $\frac{1}{2}$ SW $\frac{1}{4}$; 320.00
 sec. 22, NW $\frac{1}{4}$; 160.00
 sec. 28, W $\frac{1}{2}$ NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$, and NW $\frac{1}{4}$ NW $\frac{1}{4}$, and SW $\frac{1}{4}$ SW $\frac{1}{4}$; 240.00
 sec. 29, W $\frac{1}{2}$ NE $\frac{1}{4}$, W $\frac{1}{2}$, and SE $\frac{1}{4}$; 560.00
 sec. 30, lots 1, and 2, N $\frac{1}{2}$ NE $\frac{1}{4}$, SW $\frac{1}{4}$ NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$, and SE $\frac{1}{4}$ SE $\frac{1}{4}$; 304.49
 sec. 31, lots 2, and 3, NE $\frac{1}{4}$ NE $\frac{1}{4}$, and SW $\frac{1}{4}$ SE $\frac{1}{4}$; 145.90
 sec. 32, N $\frac{1}{2}$ N $\frac{1}{2}$, SE $\frac{1}{4}$ NE $\frac{1}{4}$, SW $\frac{1}{4}$, W $\frac{1}{2}$ SE $\frac{1}{4}$, and SE $\frac{1}{4}$ SE $\frac{1}{4}$; 480.00
 sec. 33, S $\frac{1}{2}$ NE $\frac{1}{4}$, N $\frac{1}{2}$ SE $\frac{1}{4}$, and SE $\frac{1}{4}$ SE $\frac{1}{4}$; 200.00
 sec. 34, NW $\frac{1}{4}$ NE $\frac{1}{4}$, N $\frac{1}{2}$ NW $\frac{1}{4}$, and SW $\frac{1}{4}$ SW $\frac{1}{4}$; 160.00
 4,240.82

T. 35 N., R. 4 E.,
 sec. 2, lot 2, SW $\frac{1}{4}$ NE $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, and NW $\frac{1}{4}$ SE $\frac{1}{4}$; 199.86
 199.86

T. 36 N., R. 4 E.,
 sec. 1, lots 1, 2, and 3, S $\frac{1}{2}$ NE $\frac{1}{4}$, and NE $\frac{1}{4}$ SE $\frac{1}{4}$; 240.08
 sec. 9, SE $\frac{1}{4}$; 160.00
 sec. 10, lots 3, and 4, and E $\frac{1}{2}$ SW $\frac{1}{4}$; 165.61
 sec. 24, lots 1 to 4, inclusive N $\frac{1}{2}$ NE $\frac{1}{4}$, SW $\frac{1}{4}$ NE $\frac{1}{4}$, and NW $\frac{1}{4}$ NW $\frac{1}{4}$; 302.65
 sec. 25, lots 1 to 6, inclusive NE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, and N $\frac{1}{2}$ SW $\frac{1}{4}$; 441.45
 sec. 26, SE $\frac{1}{4}$ NE $\frac{1}{4}$, E $\frac{1}{2}$ SE $\frac{1}{4}$, and SW $\frac{1}{4}$ SE $\frac{1}{4}$; 160.00
 sec. 34, E $\frac{1}{2}$ NE $\frac{1}{4}$, and SW $\frac{1}{4}$ NE $\frac{1}{4}$; 120.00
 sec. 35, E $\frac{1}{2}$ NE $\frac{1}{4}$; 80.00
 sec. 36, lots 1, 2, 3, and 5; 125.55
 1,795.34

T. 37 N., R. 4 E.,
 sec. 34, N $\frac{1}{2}$ N $\frac{1}{2}$, and SW $\frac{1}{4}$ NE $\frac{1}{4}$; 200.00
 sec. 35, NW $\frac{1}{4}$ NW $\frac{1}{4}$; 40.00
 240.00

T. 35 N., R. 5 E.,
 sec. 5, lot 4, SW $\frac{1}{4}$ NW $\frac{1}{4}$, and NE $\frac{1}{4}$ SW $\frac{1}{4}$; 119.87
 sec. 6, lots 1, 2 and 5, and SW $\frac{1}{4}$ NE $\frac{1}{4}$; 156.29
 276.16

T. 36 N., R. 5 E.,
 sec. 3, lot 1, and NE $\frac{1}{4}$ SE $\frac{1}{4}$; 81.38
 sec. 4, W $\frac{1}{2}$ SW $\frac{1}{4}$; 80.00
 sec. 5, SW $\frac{1}{4}$ SW $\frac{1}{4}$; 40.00
 sec. 6, lot 6, NE $\frac{1}{4}$ SW $\frac{1}{4}$, and SE $\frac{1}{4}$ SE $\frac{1}{4}$; 117.15
 sec. 7, lot 1, N $\frac{1}{2}$ NE $\frac{1}{4}$, and NE $\frac{1}{4}$ NW $\frac{1}{4}$; 156.93
 sec. 8, E $\frac{1}{2}$ NE $\frac{1}{4}$, NW $\frac{1}{4}$ NE $\frac{1}{4}$, and W $\frac{1}{2}$ NW $\frac{1}{4}$; 200.00
 sec. 9, NW $\frac{1}{4}$ NW $\frac{1}{4}$; 40.00
 sec. 14, S $\frac{1}{2}$ SW $\frac{1}{4}$; 80.00
 sec. 18, N $\frac{1}{2}$ NE $\frac{1}{4}$; 80.00
 sec. 19, lots 1 to 9, inclusive N $\frac{1}{2}$ NE $\frac{1}{4}$, NE $\frac{1}{4}$ NW $\frac{1}{4}$, SE $\frac{1}{4}$ SW $\frac{1}{4}$, and SW $\frac{1}{4}$ SE $\frac{1}{4}$; 454.73
 sec. 20 lots 1 to 5, inclusive N $\frac{1}{2}$, N $\frac{1}{2}$ SE $\frac{1}{4}$; 472.25
 sec. 21, N $\frac{1}{2}$ N $\frac{1}{2}$, SE $\frac{1}{4}$ NE $\frac{1}{4}$, N $\frac{1}{2}$ SW $\frac{1}{4}$, and SE $\frac{1}{4}$ SE $\frac{1}{4}$; 320.00

sec. 22, W $\frac{1}{2}$ NW $\frac{1}{4}$, and E $\frac{1}{2}$ SE $\frac{1}{4}$; 160.00
 sec. 23, W $\frac{1}{2}$ NE $\frac{1}{4}$, SE $\frac{1}{2}$ NE $\frac{1}{4}$, NE $\frac{1}{2}$ NW $\frac{1}{4}$, S $\frac{1}{2}$ SW $\frac{1}{4}$, and SW $\frac{1}{2}$ SE $\frac{1}{4}$; 280.00
 sec. 26, NW $\frac{1}{2}$ NW $\frac{1}{4}$; 40.00
 sec. 27, W $\frac{1}{2}$ W $\frac{1}{2}$, SE $\frac{1}{2}$ SW $\frac{1}{4}$, and SW $\frac{1}{2}$ SE $\frac{1}{4}$; 240.00
 sec. 28, SE $\frac{1}{2}$ NE $\frac{1}{4}$, and SE $\frac{1}{4}$; 200.00
 sec. 29, lots 1, 2, 3, 4, 5, 7, 8, 9, and 10, SW $\frac{1}{2}$ NW $\frac{1}{4}$, N $\frac{1}{2}$ SW $\frac{1}{4}$, and SW $\frac{1}{2}$ SW $\frac{1}{4}$;
 416.42
 sec. 30, lots 1 to 4, inclusive E $\frac{1}{2}$, and E $\frac{1}{2}$ W $\frac{1}{2}$; 624.80
 sec. 31, lots 1, 2, 3, and 4, inclusive MS 3418, E $\frac{1}{2}$, NE $\frac{1}{2}$ NW $\frac{1}{4}$, and SE $\frac{1}{2}$ SW $\frac{1}{4}$;
 589.31
 sec. 32, lots 1 to 5, inclusive E $\frac{1}{2}$ NE $\frac{1}{4}$, SW $\frac{1}{2}$ NE $\frac{1}{4}$; 283.43
 sec. 34, N $\frac{1}{2}$ NE $\frac{1}{4}$; 80.00
 5,036.40

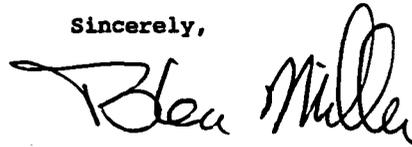
T. 37 N., R. 5 E.,
 sec. 29, SE $\frac{1}{2}$ SE $\frac{1}{4}$; 40.00
 sec. 30, SE $\frac{1}{2}$ SW $\frac{1}{4}$; 40.00
 80.00

19,764.74

In summation, we request your concurrence in a determination of eligibility and a determination of effect. We would appreciate a prompt response to this request if possible.

If you have questions about our request, please contact Stanley Jaynes at (406) 538-7461.

Sincerely,



B. Gene Miller
Associate District Manager

cc: Curly Bear Wagner
 Patrick Chief Stick
 Geneva Topsy Stump
 Alvin Windy Boy
 Gilbert Horn
 Vickie Santana
 Loren Stiff Arm
 Carl Fourstar
 Caleb Shields
 William Tallbull
 Nicol Price
 Germaine DuMontier

Patricia Hewankorn
 E.K. Lehmann
 Arlo Skari
 Don Marble
 Debbie Swanson
 Ruth Burleigh
 Ellen Seivert
 Dorothy Small
 Claudia Nissley
 Liberty County Commissioners
 Toole County Commissioners

ATTACHMENT C.4



State Historic Preservation Office

Montana Historical Society

1410 8th Avenue • PO Box 201202 • Helena, MT 59620-1202 • (406) 444-7715 • FAX (406) 444-6575

March 8, 1995

Stanley Jaynes
BLM Lewistown
POB 1160
Lewistown, MT 59457-1160

RE: Sweet Grass Hills Eligibility and Effect Finding: Mineral
Withdrawal

Stanley:

We concur in your determination that the Sweet Grass Hills District is an eligible property under criterion A with contributing properties eligible under criteria B and D. We would note for future reference that the Sweet Grass Hills draft nomination and the Keeper's Determination of Eligibility dated 01/29/93 also identify values under criterion C. We understand that the boundary proposed by the BLM is coterminous with the May 1992 draft nomination.

We concur with your finding that the proposed locatable mineral withdrawal within the historic district boundaries will have no adverse effect on those values making the District a significant historic property. We also agree with County Commissioner Woods that boundaries are important, and again urge the BLM to consult with interested Native groups on the appropriate boundaries for the district. New information of the sort requested by the Keeper on 01/29/93, and by the ACHP (05/13/93) could identify areas that might be removed from the mineral withdrawal without effect to the District (gravel sources in the Bureau of Reclamation management area for example).

If The BLM chooses Alternative C of the Draft EIS or any other BLM management plan that would reduce the area of withdrawal so as not to include the entire area proposed for the District, the possibility that such a reduction could lead to adverse effects should be considered.

Sincerely,

Stan Wilmoth, Ph.D.
Archaeologist

cc: list attached

File Comp BLM Lewistown Sweet Grass Hills
NR Sweet Grass Hills

DM	ASSOC DM
OPS	PAD
ADMIN	LE
L&RR	RR
MIN	OTHER
USD - CLEVELEIGH DISTRICT	
RECEIVED	

MAR 09 1995

BRICT DIVADM	COORD RESP
ACTION	
COPIES FOR	

ATTACHMENT C.5



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Lewistown District Office

Airport Road

P.O. Box 1160

Lewistown, Montana 59457-1160



IN REPLY REFER TO:

8140.1P

Advisory Council On Historic Preservation
Claudia Nissley, Director of Western States Review
Attn. Alan Stanfill
730 Simms Street, Room 401
Golden, CO 80401

MAR 10 1996

Dear Mr. Stanfill:

We wish to notify the Council of a determination of "no adverse effect" pursuant to 36 CRR 800.5(d)(i) for a proposed mineral withdrawal in the Sweet Grass Hills of Toole and Liberty Counties, Montana.

As evidenced by the attached letter, BLM and the Montana SHPO are in agreement that the proposed withdrawal would not adversely affect the Sweet Grass Hills Historic District. This district is considered eligible as a Traditional Cultural Property District under criterion "a" for its association with broad patterns of tribal history, with contributing elements additionally eligible under criteria b, c and d as defined at 36CFR60.4.

In making this determination of effect, we note that the historic district is eligible because of its association with significant persons and events in the historic traditions of Northern Plains Tribal groups. We believe that withdrawal from mineral entry would, if anything, have a positive effect on these historic values. Valid existing rights would not be subject to the proposed withdrawal.

The legal description for this undertaking follows.

PROPOSED LOCATABLE MINERAL WITHDRAWAL

- T. 37 N., R. 1 E.,
- sec. 1, lots 5 to 8, inclusive; 70.49
- sec. 2, lots 5, and 6, and S $\frac{1}{2}$ SE $\frac{1}{4}$; 115.00
- sec. 11, E $\frac{1}{2}$ E $\frac{1}{2}$; 160.00
- sec. 12, lots 1 to 8, inclusive and S $\frac{1}{2}$ N $\frac{1}{2}$; 478.28
- sec. 13, lots 1 to 5, inclusive W $\frac{1}{2}$ NE $\frac{1}{4}$, NW $\frac{1}{4}$, N $\frac{1}{2}$ SW $\frac{1}{2}$, SE $\frac{1}{4}$ SW $\frac{1}{2}$, and W $\frac{1}{2}$ SE $\frac{1}{4}$; 628.79
- sec. 14, lots 1 to 3, inclusive N $\frac{1}{2}$, SW $\frac{1}{4}$, and N $\frac{1}{2}$ SE $\frac{1}{4}$; 609.28
- sec. 15, E $\frac{1}{2}$ E $\frac{1}{2}$; 160.00
- sec. 22, E $\frac{1}{2}$ NE $\frac{1}{4}$; 80.00
- sec. 23, lot 1, E $\frac{1}{2}$ NE $\frac{1}{4}$, SW $\frac{1}{2}$ NE $\frac{1}{4}$, NW $\frac{1}{4}$, S $\frac{1}{2}$ SW $\frac{1}{2}$, and SE $\frac{1}{2}$; 559.30
- sec. 24, lots 1 to 4, inclusive W $\frac{1}{2}$ E $\frac{1}{2}$, and W $\frac{1}{2}$; 635.36
- sec. 25, lots 1 to 10, inclusive SW $\frac{1}{2}$ NE $\frac{1}{4}$, S $\frac{1}{2}$ NW $\frac{1}{4}$, N $\frac{1}{2}$ SW $\frac{1}{2}$, NW $\frac{1}{2}$ SE $\frac{1}{4}$; 632.71
- sec. 26, E $\frac{1}{2}$ NE $\frac{1}{4}$, N $\frac{1}{2}$ NW $\frac{1}{4}$, and S $\frac{1}{2}$; 480.00
- sec. 27, NE $\frac{1}{4}$ NE $\frac{1}{4}$, S $\frac{1}{2}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$, and NW $\frac{1}{4}$ SE $\frac{1}{4}$; 200.00
- sec. 34, NE $\frac{1}{4}$ NE $\frac{1}{4}$; 40.00
- sec. 35, NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$, and SW $\frac{1}{2}$ NW $\frac{1}{4}$; 280.00

5,129.21

T. 36 N., R. 2 E.,

sec. 5, lot 4; 39.11
sec. 6, lots 1, and 2, and SW $\frac{1}{4}$ NE $\frac{1}{4}$; 118.41
sec. 13, N $\frac{1}{2}$ NW $\frac{1}{4}$; 80.00
sec. 23, E $\frac{1}{2}$ NE $\frac{1}{4}$, and N $\frac{1}{2}$ SE $\frac{1}{4}$; 160.00
sec. 24, SW $\frac{1}{4}$ NW $\frac{1}{4}$, and W $\frac{1}{2}$ SW $\frac{1}{4}$; 120.00
sec. 25, SE $\frac{1}{4}$ NE $\frac{1}{4}$, and E $\frac{1}{2}$ SE $\frac{1}{4}$. 120.00
637.52

T. 37 N., R. 2 E.,

sec. 5, lots 8; 1.82
sec. 6, lots 6, 7, 8, 9, and 10; 46.93
sec. 7, lots 1 to 4, inclusive and E $\frac{1}{2}$ SW $\frac{1}{4}$; 238.60
sec. 17, W $\frac{1}{2}$ SW $\frac{1}{4}$; 80.00
sec. 18, SW $\frac{1}{4}$ NE $\frac{1}{4}$, E $\frac{1}{2}$ SE $\frac{1}{4}$, and NW $\frac{1}{4}$ SE $\frac{1}{4}$; 160.00
sec. 19, lots 2, 3, and 4, NE $\frac{1}{4}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, and NE $\frac{1}{4}$ SW $\frac{1}{4}$; 239.99
sec. 20, NW $\frac{1}{4}$ NE $\frac{1}{4}$, and N $\frac{1}{2}$ NW $\frac{1}{4}$; 120.00
sec. 30, lots 1 to 4, inclusive S $\frac{1}{2}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, and SE $\frac{1}{4}$; 520.88
sec. 31, lots 1, 2, and 3, NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$, and N $\frac{1}{2}$ SE $\frac{1}{4}$; 480.75
1,888.97

T. 35 N., R. 3 E.,

sec. 3, lot 4, and SW $\frac{1}{4}$ NW $\frac{1}{4}$; 80.17
sec. 4, lots 1 and 2, S $\frac{1}{2}$ NE $\frac{1}{4}$. 160.29
240.46

T. 36 N., R. 3 E.,

sec. 7, lot 2, SW $\frac{1}{4}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, and NW $\frac{1}{4}$ SE $\frac{1}{4}$; 232.24
sec. 9, NE $\frac{1}{4}$ SW $\frac{1}{4}$, and SE $\frac{1}{4}$ SE $\frac{1}{4}$; 80.00
sec. 10, S $\frac{1}{2}$ SW $\frac{1}{4}$, and SW $\frac{1}{4}$ SE $\frac{1}{4}$; 120.00
sec. 11, NW $\frac{1}{4}$ SW $\frac{1}{4}$; 40.00
sec. 15, NW $\frac{1}{4}$, W $\frac{1}{2}$ SW $\frac{1}{4}$, and SE $\frac{1}{4}$ SW $\frac{1}{4}$; 280.00
sec. 17, lots 1 and 2, E $\frac{1}{2}$ SW $\frac{1}{4}$, and SE $\frac{1}{4}$; 317.06
sec. 18, lots 5, 6, 11, and 12, and NW $\frac{1}{4}$ NE $\frac{1}{4}$; 96.58
sec. 19, lots 3, and 4, E $\frac{1}{2}$ SW $\frac{1}{4}$, and S $\frac{1}{2}$ SE $\frac{1}{4}$; 224.55
sec. 20, E $\frac{1}{2}$ NE $\frac{1}{4}$, NW $\frac{1}{4}$ NE $\frac{1}{4}$, NE $\frac{1}{4}$ NW $\frac{1}{4}$, W $\frac{1}{2}$ SW $\frac{1}{4}$, and SE $\frac{1}{4}$ SW $\frac{1}{4}$; 280.00
sec. 21, NE $\frac{1}{4}$, N $\frac{1}{2}$ NW $\frac{1}{4}$, and S $\frac{1}{2}$ SW $\frac{1}{4}$; 320.00
sec. 22, NW $\frac{1}{4}$; 160.00
sec. 28, W $\frac{1}{2}$ NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$, and NW $\frac{1}{4}$ NW $\frac{1}{4}$, and SW $\frac{1}{4}$ SW $\frac{1}{4}$; 240.00
sec. 29, W $\frac{1}{2}$ NE $\frac{1}{4}$, W $\frac{1}{2}$, and SE $\frac{1}{4}$; 560.00
sec. 30, lots 1, and 2, N $\frac{1}{2}$ NE $\frac{1}{4}$, SW $\frac{1}{4}$ NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$, and SE $\frac{1}{4}$ SE $\frac{1}{4}$; 304.49
sec. 31, lots 2, and 3, NE $\frac{1}{4}$ NE $\frac{1}{4}$, and SW $\frac{1}{4}$ SE $\frac{1}{4}$; 145.90
sec. 32, N $\frac{1}{2}$ N $\frac{1}{2}$, SE $\frac{1}{4}$ NE $\frac{1}{4}$, SW $\frac{1}{4}$, W $\frac{1}{2}$ SE $\frac{1}{4}$, and SE $\frac{1}{4}$ SE $\frac{1}{4}$; 480.00
sec. 33, S $\frac{1}{2}$ NE $\frac{1}{4}$, N $\frac{1}{2}$ SE $\frac{1}{4}$, and SE $\frac{1}{4}$ SE $\frac{1}{4}$; 200.00
sec. 34, NW $\frac{1}{4}$ NE $\frac{1}{4}$, N $\frac{1}{2}$ NW $\frac{1}{4}$, and SW $\frac{1}{4}$ SW $\frac{1}{4}$. 160.00
4,240.82

T. 35 N., R. 4 E.,

sec. 2, lot 2, SW $\frac{1}{4}$ NE $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, and NW $\frac{1}{4}$ SE $\frac{1}{4}$. 199.86
199.86

T. 36 N., R. 4 E.,

sec. 1, lots 1, 2, and 3, S $\frac{1}{2}$ NE $\frac{1}{4}$, and NE $\frac{1}{4}$ SE $\frac{1}{4}$; 240.08
sec. 9, SE $\frac{1}{4}$; 160.00
sec. 10, lots 3, and 4, and E $\frac{1}{2}$ SW $\frac{1}{4}$; 165.61
sec. 24, lots 1 to 4, inclusive N $\frac{1}{2}$ NE $\frac{1}{4}$, SW $\frac{1}{4}$ NE $\frac{1}{4}$, and NW $\frac{1}{4}$ NW $\frac{1}{4}$; 302.65
sec. 25, lots 1 to 6, inclusive NE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, and N $\frac{1}{2}$ SW $\frac{1}{4}$; 441.45
sec. 26, SE $\frac{1}{4}$ NE $\frac{1}{4}$, E $\frac{1}{2}$ SE $\frac{1}{4}$, and SW $\frac{1}{4}$ SE $\frac{1}{4}$; 160.00
sec. 34, E $\frac{1}{2}$ NE $\frac{1}{4}$, and SW $\frac{1}{4}$ NE $\frac{1}{4}$; 120.00

sec. 35, E $\frac{1}{2}$ NE $\frac{1}{4}$; 80.00
 sec. 36, lots 1, 2, 3, and 5. 125.55
 1,795.34

T. 37 N., R. 4 E.,
 sec. 34, N $\frac{1}{2}$ N $\frac{1}{2}$, and SW $\frac{1}{4}$ NE $\frac{1}{4}$; 200.00
 sec. 35, NW $\frac{1}{4}$ NW $\frac{1}{4}$. 40.00
 240.00

T. 35 N., R. 5 E.,
 sec. 5, lot 4, SW $\frac{1}{4}$ NW $\frac{1}{4}$, and NE $\frac{1}{4}$ SW $\frac{1}{4}$; 119.87
 sec. 6, lots 1, 2 and 5, and SW $\frac{1}{4}$ NE $\frac{1}{4}$. 156.29
 276.16

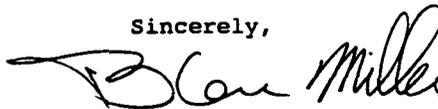
T. 36 N., R. 5 E.,
 sec. 3, lot 1, and NE $\frac{1}{4}$ SE $\frac{1}{4}$; 81.38
 sec. 4, W $\frac{1}{2}$ SW $\frac{1}{4}$; 80.00
 sec. 5, SW $\frac{1}{4}$ SW $\frac{1}{4}$; 40.00
 sec. 6, lot 6, NE $\frac{1}{4}$ SW $\frac{1}{4}$, and SE $\frac{1}{4}$ SE $\frac{1}{4}$; 117.15
 sec. 7, lot 1, N $\frac{1}{2}$ NE $\frac{1}{4}$, and NE $\frac{1}{4}$ NW $\frac{1}{4}$; 156.93
 sec. 8, E $\frac{1}{2}$ NE $\frac{1}{4}$, NW $\frac{1}{4}$ NE $\frac{1}{4}$, and W $\frac{1}{2}$ NW $\frac{1}{4}$; 200.00
 sec. 9, NW $\frac{1}{4}$ NW $\frac{1}{4}$; 40.00
 sec. 14, S $\frac{1}{2}$ SW $\frac{1}{4}$; 80.00
 sec. 18, N $\frac{1}{2}$ NE $\frac{1}{4}$; 80.00
 sec. 19, lots 1 to 9, inclusive N $\frac{1}{2}$ NE $\frac{1}{4}$, NE $\frac{1}{4}$ NW $\frac{1}{4}$, SE $\frac{1}{4}$ SW $\frac{1}{4}$,
 and SW $\frac{1}{4}$ SE $\frac{1}{4}$; 454.73
 sec. 20, lots 1 to 5, inclusive N $\frac{1}{2}$, N $\frac{1}{2}$ SE $\frac{1}{4}$; 472.25
 sec. 21, N $\frac{1}{2}$ N $\frac{1}{2}$, SE $\frac{1}{4}$ NE $\frac{1}{4}$, N $\frac{1}{2}$ SW $\frac{1}{4}$, and SE $\frac{1}{4}$ SE $\frac{1}{4}$; 320.00
 sec. 22, W $\frac{1}{2}$ NW $\frac{1}{4}$, and E $\frac{1}{2}$ SE $\frac{1}{4}$; 160.00
 sec. 23, W $\frac{1}{2}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NE $\frac{1}{4}$, NE $\frac{1}{4}$ NW $\frac{1}{4}$, S $\frac{1}{2}$ SW $\frac{1}{4}$, and SW $\frac{1}{4}$ SE $\frac{1}{4}$; 280.00
 sec. 26, NW $\frac{1}{4}$ NW $\frac{1}{4}$; 40.00
 sec. 27, W $\frac{1}{2}$ W $\frac{1}{2}$, SE $\frac{1}{4}$ SW $\frac{1}{4}$, and SW $\frac{1}{4}$ SE $\frac{1}{4}$; 240.00
 sec. 28, SE $\frac{1}{4}$ NE $\frac{1}{4}$, and SE $\frac{1}{4}$; 200.00
 sec. 29, lots 1, 2, 3, 4, 5, 7, 8, 9, and 10, SW $\frac{1}{4}$ NW $\frac{1}{4}$,
 N $\frac{1}{2}$ SW $\frac{1}{4}$, and SW $\frac{1}{4}$ SW $\frac{1}{4}$; 416.42
 sec. 30, lots 1 to 4, inclusive E $\frac{1}{2}$, and E $\frac{1}{2}$ W $\frac{1}{2}$; 624.80
 sec. 31, lots 1, 2, 3, and 4, inclusive MS 3418, E $\frac{1}{2}$,
 NE $\frac{1}{4}$ NW $\frac{1}{4}$, and SE $\frac{1}{4}$ SW $\frac{1}{4}$; 589.31
 sec. 32, lots 1 to 5, inclusive E $\frac{1}{2}$ NE $\frac{1}{4}$, SW $\frac{1}{4}$ NE $\frac{1}{4}$; 283.43
 sec. 34, N $\frac{1}{2}$ NE $\frac{1}{4}$; 80.00
 5,036.40

T. 37 N., R. 5 E.,
 sec. 29, SE $\frac{1}{4}$ SE $\frac{1}{4}$; 40.00
 sec. 30, SE $\frac{1}{4}$ SW $\frac{1}{4}$; 40.00
 80.00
 19,764.74

We shall assume your concurrence in this determination of effect unless we hear otherwise from you by April 14, 1995.

If you have questions, please contact Stanley Jaynes at 406-538-7461.

Sincerely,



cc: List attached

ATTACHMENT C.6



United States Department of the Interior

FISH AND WILDLIFE SERVICE

NOV 22 1993
ECOLOGICAL SERVICES
100 NORTH PARK, SUITE 320 Great Falls, Montana
HELENA MT 59601



IN REPLY REFER TO:

ES-61130-Billings
M.28-OSM (I)

November 19, 1993

MEMORANDUM

TO: Richard L. Hopkins, Bureau of Land Management, Great Falls Resource Area, Great Falls, MT.

FROM: Field Supervisor, Montana Field Office, Ecological Services, Fish and Wildlife Service, Helena, Montana

SUBJECT: Threatened and Endangered Species List for West HiLine Resource Management Plan/EIS Amendment - Sweetgrass Hills Mineral Entry

This responds to your October 7, 1993 memorandum regarding the proposed amendment of the West HiLine Resource Management Plan/EIS in order to withdraw the three buttes that make up the Sweetgrass Hills from mineral entry under the 1872 Mining Law.

The threatened and endangered species which may occur in the project area include the peregrine falcon (Falco peregrinus), bald eagle (Haliaeetus leucocephalus), and black-footed ferret (Mustela nigripes).

In order to determine if formal consultation is required, the Service recommends the responsible agency prepare a biological assessment for construction projects requiring an environmental impact statement (refer to Section 402.12, 50 CFR, Part 402, June 3, 1986), or an equivalent analysis for other projects, in accordance with Section 402.14, 50 CFR, part 402. We recommend that biological assessments include the following:

1. A description of the project,
2. A description of the specific area that may be affected by the action,
3. The current status, habitat use, and behavior of threatened and endangered species in the project area,
4. Discussion of the methods used to determine the information in Item 3,

ATTACHMENT C.7

SGH 1616.045

Kemper M. McMaster, Field Supervisor
Fish and Wildlife Service
Montana Field Office
Ecological Services
100 North Park, Suite 320
Helena, Montana 59601

FEB 14 1995

Dear Kemper,

This letter will suffice as the biological evaluation on the Sweetgrass Hills Resource Management Plan Amendment/EIS preferred alternative.

At our request, you sent to us on Nov. 19, 1993, a list of threatened and endangered species which may occur in the study area. They included the black-footed ferret (Mustela nigripes), bald eagle (Haliaeetus leucocephalus), and peregrine falcon (Falco peregrinus).

The study area contains no prairie dog towns which would provide the principle food source for the black-footed ferret. Because of the rougher topography over most of the area it is unlikely that prairie dogs would ever establish there.

The study area neither contains or is close to fisheries that could serve as a food source for bald eagles. Therefore, bald eagles have not established breeding territories in the Sweetgrass Hills nor would they be suspected to ever do so.

The study area appears to be suitable peregrine falcon habitat and could serve for hack sites in the ongoing reintroduction/reestablishment program that is currently underway. BLM recognized the value of the "Hills" for this purpose in the original West HiLine Resource Management Plan of 1988. One of the main reasons for designating the Sweetgrass Hills as an Area of Critical Environmental Concern in that plan was for its value for the peregrine program.

The preferred alternative (Draft EIS attached) would contribute to the value of the ACEC as an area for peregrine hack sites. The alternative contains protective measures to keep the study area in a natural state by preventing hard-rock mining.

Therefore, BLM determines this alternative to be a "no effect" or "positive effect" for threatened and endangered species.

Sincerely,
[Signature]
Area Manager

MT067:TDay:TD:2/13/95:x217

TAD 2/14/95

ATTACHMENT C.8



United States Department of the Interior Bureau of Land Management
Great Falls Resource Area

FISH AND WILDLIFE SERVICE

ECOLOGICAL SERVICES
100 N PARK, SUITE 320
HELENA MT 59601

JAN 16 1996

Great Falls, Montana

File: M.02 BLM(I)

January 11, 1996

Richard Hopkins, Area Manager
Bureau of Land Management
Great Falls Resource Area
812 14th Street North
Great Falls, MT 59401

Dear Mr. Hopkins:

This is in response to your February 11, 1995 letter requesting that the Fish and Wildlife Service (Service) review your biological evaluation of the Draft Sweet Grass Hills Amendment and Environmental Impact Statement (EIS) pertaining to Federally listed threatened and endangered species.

The Service has reviewed the biological evaluation and draft amendment and environmental impact statement and concurs with the determination that the proposed actions will have no effect on the threatened bald eagle (*Haliaeetus leucocephalus*), or endangered peregrine falcon (*Falco peregrinus anatum*) or the black-footed ferret (*Mustela nigripes*). Therefore, pursuant to section 402.13(a) of the 50 CFR, formal consultation is not required.

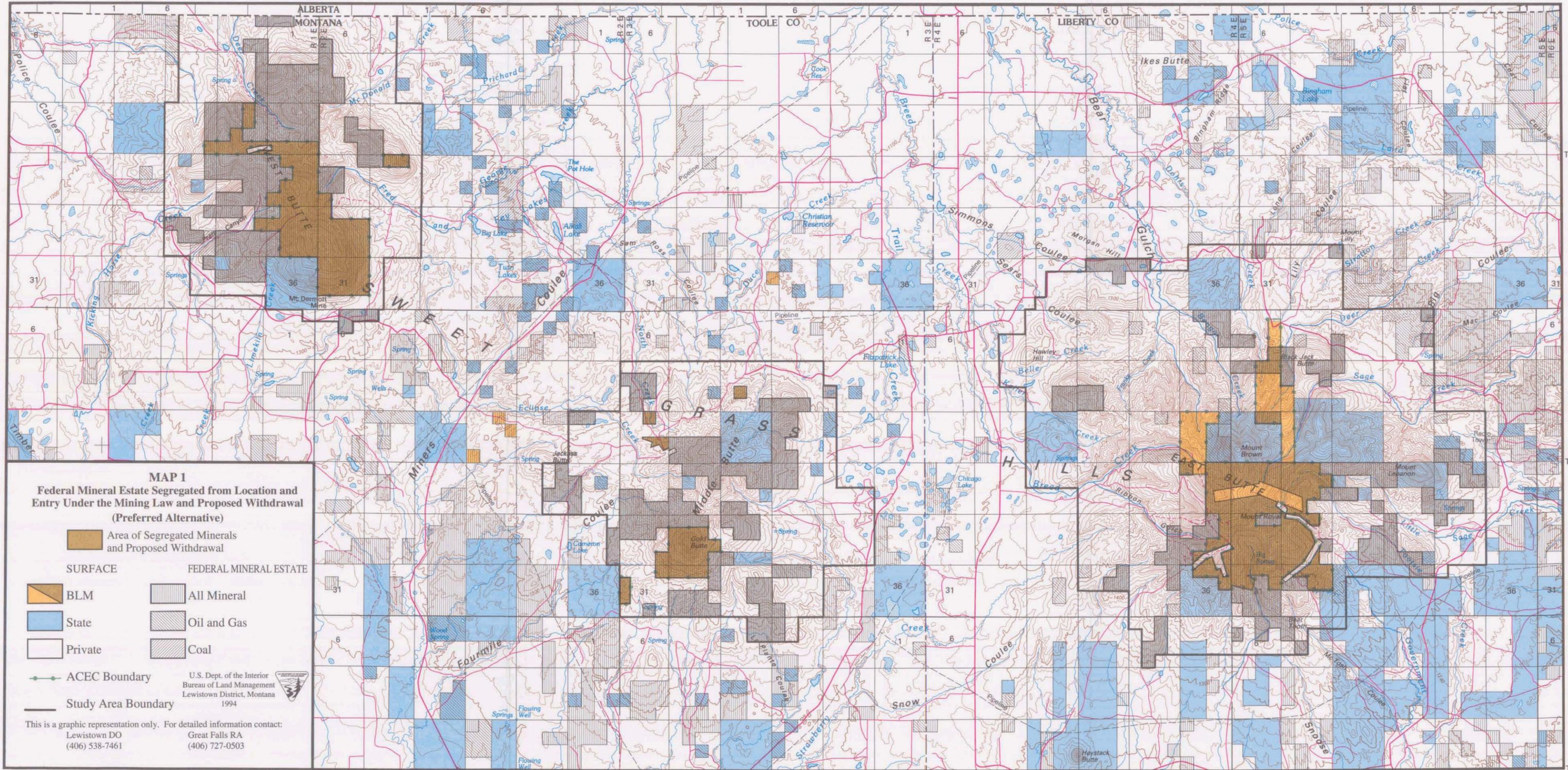
The Service bases its concurrence on the information presented in the biological evaluation and in the draft document. There is no suitable habitat for either black-footed ferrets or bald eagles within the project area. Although no peregrine falcons are known to occupy the area, the proposed action (the preferred alternative in the draft EIS) would promote the suitability of the area for peregrines by preventing hard-rock mining. If the final project design is changed so as to have effects on threatened or endangered species other than those described in your Draft Environmental Assessment, a revised biological evaluation may be necessary. The Service will then issue a letter of concurrence or nonconcurrence for the revised biological evaluation.

If you have questions regarding this issue, please contact Anne Vandehey of my staff at the address provided above, or by phone (406) 449-5225. Your cooperation and assistance in meeting our joint responsibilities under the Endangered Species Act are appreciated.

Sincerely,

Kemper M. McMaster
Field Supervisor
Montana Field Office

CANADA

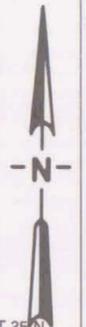


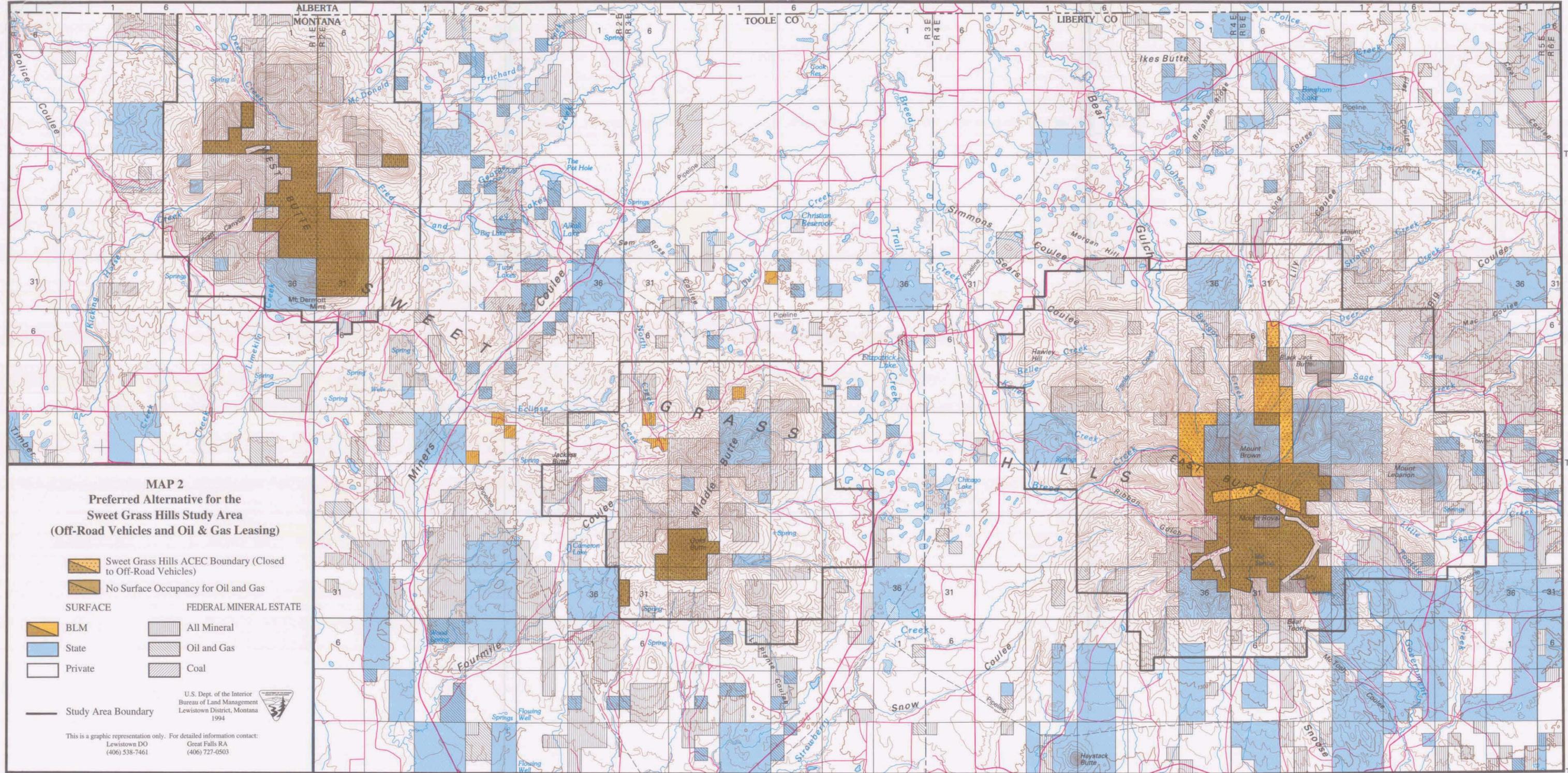
MAP 1
Federal Mineral Estate Segregated from Location and Entry Under the Mining Law and Proposed Withdrawal (Preferred Alternative)

- Area of Segregated Minerals and Proposed Withdrawal
- SURFACE**
- BLM
- State
- Private
- ACEC Boundary
- Study Area Boundary
- FEDERAL MINERAL ESTATE**
- All Mineral
- Oil and Gas
- Coal

U.S. Dept. of the Interior
Bureau of Land Management
Lewistown District, Montana
1994

This is a graphic representation only. For detailed information contact:
Lewistown DO (406) 538-7461
Great Falls RA (406) 727-0503





MAP 2
Preferred Alternative for the
Sweet Grass Hills Study Area
(Off-Road Vehicles and Oil & Gas Leasing)

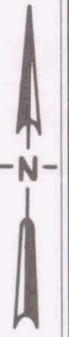
- Sweet Grass Hills ACEC Boundary (Closed to Off-Road Vehicles)
- No Surface Occupancy for Oil and Gas

SURFACE		FEDERAL MINERAL ESTATE	
	BLM		All Mineral
	State		Oil and Gas
	Private		Coal

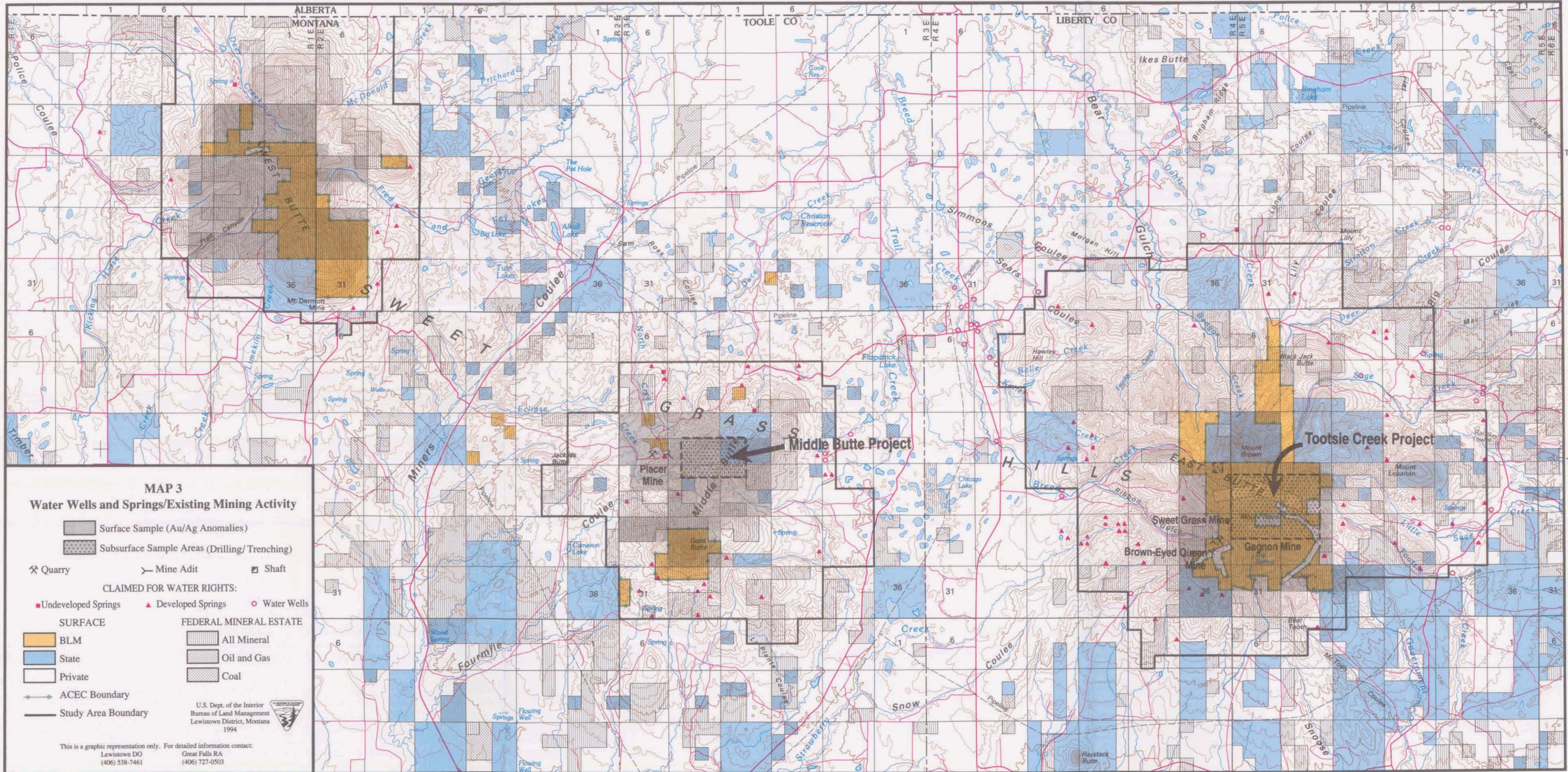
Study Area Boundary

U.S. Dept. of the Interior
Bureau of Land Management
Lewistown District, Montana
1994

This is a graphic representation only. For detailed information contact:
Lewistown DO (406) 538-7461
Great Falls RA (406) 727-0503



T 37 N
T 36 N
T 35 N



MAP 3
Water Wells and Springs/Existing Mining Activity

- Surface Sample (Au/Ag Anomalies)
- Subsurface Sample Areas (Drilling/Trenching)
- Quarry
- Mine Adit
- Shaft

CLAIMED FOR WATER RIGHTS:

- Undeveloped Springs
- Developed Springs
- Water Wells

SURFACE

- BLM
- State
- Private

FEDERAL MINERAL ESTATE

- All Mineral
- Oil and Gas
- Coal

ACEC Boundary

Study Area Boundary

U.S. Dept. of the Interior
Bureau of Land Management
Lewistown District, Montana
1994

This is a graphic representation only. For detailed information contact:
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Great Falls RA (406) 727-0503

