

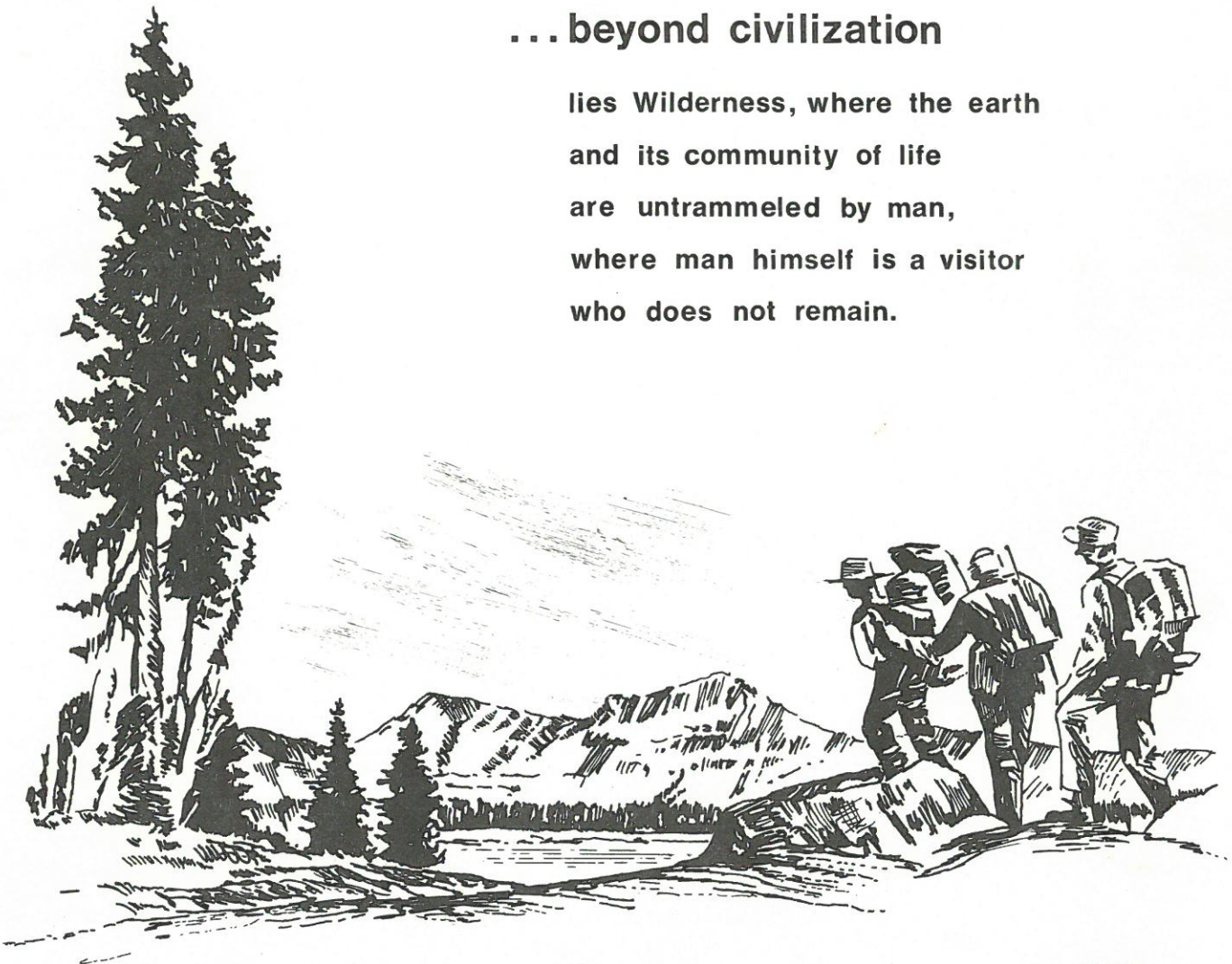
*... A Proposal and Report*

# **Mount Henry, Taylor-Hilgard and West Pioneer.. Montana Wilderness Study Act Areas**

**Beaverhead, Gallatin and Kootenai National Forests - Montana**

**...beyond civilization**

lies Wilderness, where the earth  
and its community of life  
are untrammelled by man,  
where man himself is a visitor  
who does not remain.



**UNITED STATES DEPARTMENT OF AGRICULTURE  
FOREST SERVICE**



UNITED STATES DEPARTMENT OF AGRICULTURE  
FOREST SERVICE  
NORTHERN REGION

MOUNT HENRY, TAYLOR-HILGARD, AND WEST PIONEER STUDY REPORT

AND  
ENVIRONMENTAL STATEMENT

80-10

Prepared in accordance with

Section 2(a) and (b) of Public Law 95-150,  
Section 3(b) of Public Law 88-557, and  
Section 102(2)(c) of Public Law 91-190

TYPE OF STATEMENT: DRAFT

DATE OF TRANSMISSION TO THE  
ENVIRONMENTAL PROTECTION AGENCY:

Date: **SEP 19 1980**

Type of Action: Legislative

Responsible  
Officials:

R. MAX PETERSON, Chief  
USDA-Forest Service  
P.O. Box 2417  
Washington, DC 20013

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Bureau of Land Management  
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Washington, Dc 20240

Lead Agency

Cooperating Agency

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# SUMMARY

I. TYPE OF STATEMENT: DRAFT ENVIRONMENTAL IMPACT STATEMENT

II. U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE

III. TYPE OF ACTION: LEGISLATIVE

IV. PROPOSED ACTION:

It is recommended that 128,472 acres of National Forest System lands in the Beaverhead and Gallatin National Forests be designated as wilderness by an Act of Congress, and be added to the National Wilderness Preservation System. It is also recommended that 1,469 acres of Bureau of Land Management lands in the Dillon Resource Area be designated as wilderness. The proposal also envisions a land adjustment plan that would acquire 25,328 acres of private land for eventual designation as wilderness. Within the proposed wilderness are 2,557 acres of State of Montana land.

Of the lands proposed for wilderness, 119,688 acres of National Forest System lands, 1,469 acres of Bureau of Land Management lands, and 25,328 acres of private land would create the Madison Wilderness, 7,243 acres of National Forest System lands would be added to the presently endorsed Spanish Peaks Wilderness proposal, and 1,541 acres of National Forest System lands be added to the Bureau of Land Management's proposed Bear Trap Canyon Wilderness.

The proposed wilderness and additions to proposed wildernesses lie in the Taylor-Hilgard study area in Madison and Gallatin counties in southwestern Montana. They would be administered in accordance with all provisions of the Wilderness Act, Public Law 88-577, dated September 3, 1964, and the Regulations of the Secretary of Agriculture, Title 36 C.F.R. 252.15; 261.16; 261.57; 293.1 to 293.15.

The proposed action also proposes nonwilderness designation for the Mount Henry and West Pioneer study areas in the Kootenai and Beaverhead National Forests respectively. Management of these areas would be in accordance with the East Fork Yaak, South Fork Yaak, West Kootenai, and Big Creek Unit Plans for Mount Henry and Part I of the Beaverhead Multiple Use Plan for West Pioneer until completion of Forest Land and Resource Planning.

A 40-acre parcel of Bureau of Land Management land, lying adjacent to J1-549 (Jack Creek) is proposed as nonwilderness and would be managed in accordance with the Dillon Resource Area Management Framework Plan.

## ii Summary

### V. ALTERNATIVES CONSIDERED AND PREFERRED ALTERNATIVES

#### Acres 1/ by Alternatives

Alternatives	Mount Henry		Taylor-Hilgard		West Pioneer	
	Wilder- ness	Nonwilder- ness	Wilder- ness	Nonwilder- ness	Wilder- ness	Nonwilder- ness
A (No Action)	-	-	-	-	-	-
B (Maximum Wilderness)	20,520	2,930	377,059	12,365	144,310	3,840
C (Nonwilderness)	Preferred - 23,450		-	389,424	Preferred - 148,150	
D (Modified Wilderness)	15,590	7,860	Preferred 157,826 231,598		90,542	57,608
E "	11,550	11,900	83,244	306,180	49,573	98,577
F "	-	-	159,701	229,723	-	-
G "	-	-	123,344	266,080	-	-
H "	-	-	98,244	291,180	-	-

1/ Gross acreage includes all lands, both Federal and non-Federal, in the study area.

The proposal maps, alternative D for Taylor-Hilgard, and alternative C for both Mount Henry and West Pioneer, are contained in the Environmental Statement map package.

### VI. SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS

Under Wilderness Designation for the Madison Wilderness, and proposed additions.--Development or management of most tangible renewable and nonrenewable resources will be foregone, including loss of timber through uncontrolled insect and disease infestations, reduced opportunities for developed outdoor recreation activities, reduction of motorized access, reduction of renewable goods and services available to the economy, possibly greater losses from fire because of appropriate suppression response, and restriction of exploration and development of mineral values in order to protect the wilderness character of the land. Some of these impacts can be minimized by use of more controls or restrictions, while still maintaining the wilderness environment and natural processes.

Under Nonwilderness Designation for the remainder of Taylor-Hilgard, all of Mount Henry, and all of West Pioneer.--The opportunity for wilderness may be reduced through management activities including timber harvesting, minerals development, and associated road construction. The opportunities for primitive forms of recreation will remain on portions of the areas; they will be replaced by more development-oriented recreation in other portions. Where development activities take place those wildlife and fisheries species that flourish in an atmosphere of minimal disturbance will tend to be replaced by those that are adaptable to disturbed conditions.

VII. CONSULTATION WITH OTHERS

The following Federal, State and local agencies, and other organizations will receive copies of this draft environmental impact statement and written comments will be requested from them.

A. FEDERAL AGENCIES

Bureau of Indian Affairs  
Bureau of Land Management  
Bureau of Reclamation  
National Park Service  
Soil Conservation Service  
Bonneville Power Administration  
Bureau of Mines  
Bureau of Outdoor Recreation  
Environmental Protection Agency  
Geological Survey  
Fish and Wildlife Service

B. STATE AND REGIONAL AGENCIES

Governor, State of Montana  
Montana Association of Conservation Districts  
Montana Association of Counties  
Montana Bureau of Mines and Geology  
Montana Cooperative Wildlife Research Unit  
Montana Department of Agriculture  
Montana Department of Fish, Wildlife, and Parks  
Montana Department of Health and Environmental Science  
Montana Department of Livestock  
Montana Department of Natural Resources and Conservation  
Montana Department of State Lands  
Montana State Clearinghouse, Office of Budget, and Program Planning

C. COUNTY AGENCIES

Beaverhead County Commissioners  
Gallatin County Commissioners  
Lincoln County Commissioners  
Madison County Commissioners

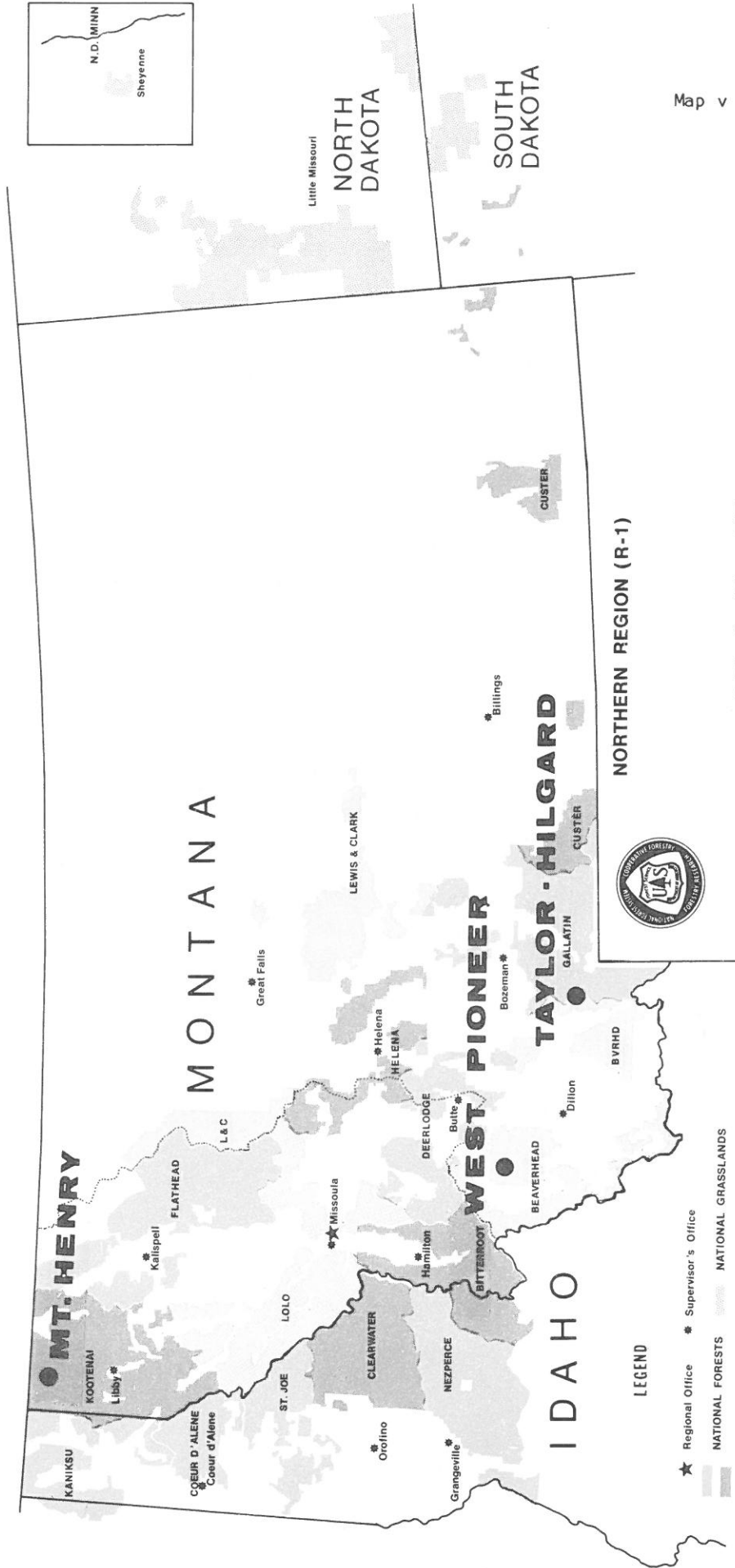
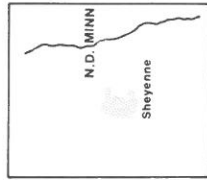


iv Summary

D. ORGANIZATIONS

Anaconda Wilderness Association  
Audubon Society  
Backcountry Horsemen of America  
Beaverhead Forest Concerned Citizens  
Environmental Information Center  
Environmental Quality Council  
Friends of the Earth  
League of Women Voters  
Madison-Gallatin Alliance  
Montana 4x4 Association  
Montana League of Conservation Voters  
Montana Outfitters and Guides Association  
Montana Snowmobile Association  
Montana Water Development Association  
Montana Wilderness Association  
Montana Wildlife Federation  
National Wildlife Federation  
Sierra Club  
United States Ski Association  
Western Montana Fish and Game Association  
Wilderness Institute  
The Wilderness Society  
United 4-Wheel-Drive Association  
Inland Forest Resource Council  
Montana Cattlemen's Association  
Montana Mining Association  
Montana Petroleum Association  
Montana State Chamber of Commerce  
Montana Stockgrowers Association  
Montana Wood Products Association  
Montana Woolgrowers Association  
Northern Plains Resource Council  
Society of American Foresters  
Western Environmental Trade Association  
Western Forest Industries Association  
American Motorcyclist Association  
Wildlife Management Institute  
Sierra Club Legal Defense Fund  
Friends of the Earth  
American Mining Congress  
Federal Timber Purchasers Association  
Northwest Mining Association  
Western Interstate Energy Board  
Western Systems Coordinating Council

VIII. DATE DRAFT ENVIRONMENTAL IMPACT STATEMENT MADE AVAILABLE TO THE  
ENVIRONMENTAL PROTECTION AGENCY AND TO THE PUBLIC: SEP 19 1980.



NORTHERN REGION (R-1)



LEGEND

- ★ Regional Office
- ★ Supervisor's Office

NATIONAL FORESTS

NATIONAL GRASSLANDS

Vicinity Map

Map v

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# INTRODUCTION

On November 1, 1977, Congress passed the Montana Wilderness Study Act (P.L. 95-150). The Act requires the Secretary of Agriculture to study and make recommendations to Congress by 1982 on the wilderness suitability of nine separate National Forest areas in Montana containing 973,000 acres.

In June of 1977 the Forest Service launched the Roadless Area Review and Evaluation (RARE II) process. The purpose was to identify all roadless and undeveloped areas in the National Forest System and recommend their allocations as either wilderness or nonwilderness. All of the nine Montana Wilderness Study Act areas were included in the RARE II inventory completed on October 1, 1977.

In the Montana Wilderness Study Act, Congress specified that the nine areas be studied using the procedures in Sec. 3(b) and 3(d) of the Wilderness Act (P.L. 88-577). This procedure includes:

- Determining suitability for wilderness preservation.
- Public notice and hearings.
- Notice to Governor of Montana, county governments, Federal Departments and Agencies concerned.
- Sixty-day review period.
- Incorporate hearing and governmental agency and department comment in the report to Congress.

The RARE II process did not include public notice and hearings and their incorporation in the report to Congress. The Forest Service decided to include the Montana Wilderness Study Act (MWSA) areas in the RARE II process to the extent possible. Through the RARE II process, all MWSA study areas were placed under the further planning recommendation until the remaining legislative requirements were completed.

The purpose of this draft environmental impact statement is to extract and display the appropriate RARE II findings 2/ and to address public issues and concerns identified by the Forest Service in greater detail.

This statement provides the basis for public review and comment at the formal public hearings as directed by Congress.

Those areas recommended for wilderness, if accepted by Congress, will become additions to the National Wilderness Preservation System (NWPS). This system has grown from the original Gila Wildland Area established by the Forest Service in 1924 to include other wilderness and primitive areas created in the following decades.

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2/ Forest Service, RARE II Draft Environmental Statement and Montana Supplement. USDA-Forest Service, 1978.

## 2 Introduction

In 1964, passage of the Wilderness Act gave wilderness preservation the force of law, expanded the system to include other Federal lands, and gave Congress the sole authority to classify future wildernesses.

As of July 1, 1980, the National Wilderness Preservation System consists of 187 areas totaling more than 19 million acres. National Forest land totals 15.3 million acres in 110 areas.

The Montana portion of the wilderness system presently totals 3,152,964 acres in 13 areas, consisting of:

<u>Wilderness 3/</u>	<u>Acres</u>	<u>Agency</u>
Absaroka Beartooth	920,377	Forest Service
Anaconda Pintler	157,874	Forest Service
Bob Marshall	1,009,889	Forest Service
Cabinet Mountains	94,272	Forest Service
Gates of the Mountains	28,562	Forest Service
Mission Mountains	73,877	Forest Service
Scapegoat	239,296	Forest Service
Selway-Bitterroot (MT portion)	248,893	Forest Service
Welcome Creek	28,184	Forest Service
Great Bear	286,700	Forest Service
Medicine Lake	11,800	National Fish & Wildlife Service
Red Rock Lakes	32,350	National Fish & Wildlife Service
U.L. Bend	20,890	National Fish & Wildlife Service
Total	<u>3,152,964</u>	

The areas listed below are proposed for wilderness, totaling 1,823,896 acres, and are likely eventual additions to the systems in Montana:

<u>Proposed Wilderness</u>	<u>Acres</u>	<u>Agency</u>
Spanish Peaks Primitive Area	63,000	Forest Service
Glacier Park Wilderness	927,550	National Park Service
Yellowstone Park Wilderness	47,000	National Park Service
C.M. Russell National Wildlife Refuge	155,288	National Fish & Wildlife Service

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3/ Land Areas of the National Forest System as of September 30, 1979; Forest Service, RARE II Draft Environmental Statement and Montana Supplement, 1978; and Forest Service, RARE II Final Environmental Statement. USDA-Forest Service, 1979.



<u>Proposed Wilderness</u>	<u>Acres</u>	<u>Agency</u>
Scotchman Peak	64,371	Forest Service
Hoodoo	77,697	Forest Service
Big Hole	53,375	Forest Service
Sliderock	60,050	Forest Service
East Pioneer	93,859	Forest Service
Lost Water Canyon	9,800	Forest Service
Tongue River Breaks	16,600	Forest Service
Lionhead	22,400	Forest Service
Additions to North Absaroka Wilderness	2,900	Forest Service
Additions to Anaconda-Pintler Wilderness	15,952	Forest Service
Additions to Bob Marshall and Scapegoat Wilderness	140,374	Forest Service
Additions to Cabinet Mountains Wilderness	15,580	Forest Service
Addition to Gates of the Mountains Wilderness	10,000	Forest Service
Additions to Selway-Bitterroot Wilderness	<u>48,100</u>	Forest Service
Total proposed for wilderness in Montana	1,823,896	

It is reasonable to assume the Montana portion of the National Wilderness Preservation System will, within the next few years, total about 5 million acres, plus any acreage selected as a result of the Montana Wilderness Study Act. This Act mandates review of the following areas:

	<u>Acres*</u>		<u>Forest</u>
	<u>Gross</u>	<u>Net</u>	
Big Snowies	102,333	102,233	Lewis & Clark
Bluejoint	61,400	61,400	Bitterroot
Hyalite-Porcupine-Buffalo Horn	151,000	103,850	Gallatin
Middle Fork Judith	92,200	91,000	Lewis & Clark
Mount Henry	23,450	23,450	Kootenai
Sapphires	99,315	98,815	Bitterroot
			Deerlodge
Taylor-Hilgard	387,915	325,842	Beaverhead
			Gallatin
Ten Lakes	34,000	33,885	Kootenai
West Pioneer	<u>148,150</u>	<u>147,958</u>	Beaverhead
TOTAL	1,099,763	988,433	

\* In some cases a refinement of acreage calculations has been made as a result of RARE II. Some contiguous RARE II acreage (including the Madison R1-549 and J1-549) has been included.

#### 4 Introduction

On February 21, 1980, the Forest Service issued a news release outlining the process to be followed in the study of the nine Montana Wilderness Study Act (Public Law 95-150) areas in six Montana National Forests. The schedule of the environmental statement and announcement of hearings has changed slightly since this statement was issued.

This news release stated:

More than 800 people participated in twelve Montana Wilderness Study Act workshops last September. Following the September workshops, there was a 30-day public comment period to permit individuals and groups to submit written comments.

In December the Forest Service announced a summary list of the 14 top resource issues brought up at the workshops and addressed in the public comment letters. These will be addressed in the draft environmental impact statements.

In addition to the resource issues, several study process concerns were expressed by workshop participants. These concerns suggested the need for adequate data, and individual area study spaced over the full length of time authorized by law.

The new process announced by the Forest Service today reflects public workshop comments and the work of a citizen advisory committee regarding the adequacy of the timber data. All of the legal, administrative, and professional study requirements will be covered by the new study process.

For the past 6 months a citizen advisory committee of professionals from various interest groups has been working with the Forest Service in evaluating the timber data available for the nine study areas. The acceptability of the timber data has been a long-standing concern to a number of publics. The advisory committee found the data adequate for four areas: Taylor-Hilgard, West Pioneer, Mount Henry, and Bluejoint.

The Forest Service will continue preparing a single draft environmental impact statement for three of these areas. The U.S. House of Representatives (in Report 95-620 that accompanied S.393) has asked that priority be given to the study of Taylor-Hilgard, West Pioneer, and Mount Henry.

The draft environmental statement of these three areas is scheduled for release to the public in the summer of 1980. Public hearings on the draft environmental statement will be announced in late spring. The final environmental statement is to be issued early in 1981 for transmission by the Secretary of Agriculture to the President and Congress.

The citizen advisory committee determined that there was not adequate timber data on five areas: Big Snowies, Middle Fork Judith, Hyalite, <sup>4/</sup> Ten Lakes, and the Bitterroot National Forest portion of the Sapphires. Additional timber data will be collected for these five areas this spring and summer.

These five areas and the Bluejoint area are to be studied as part of the individual Forest land and resource management planning process on each National Forest. These plans are scheduled to be completed by the end of the legislative study period, November 1, 1982. Below is the time schedule for completion of the draft and final environmental impact statements for the six areas and Forests:

	<u>Draft EIS</u>	<u>Final EIS</u>
Big Snowies, Lewis & Clark National Forest	April 1981	October 1981
Middle Fork Judith, Lewis & Clark National Forest	April 1981	October 1981
Hyalite, Gallatin National Forest	July 1981	July 1982
Ten Lakes, Kootenai National Forest	May 1981	September 1981
Sapphires, Bitterroot & Deerlodge National Forests	May 1982	November 1982
Bluejoint, Bitterroot National Forest	May 1982	November 1982

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<sup>4/</sup> Timber data for the Hyalite area was subsequently found to be adequate, see Forest Service, Acre, Volume, and Productivity Estimates and Associated Standard Errors for Nine Wilderness Study Areas in Montana. USDA-Forest Service, Technical Advisory Committee Report, 1980.



## 6 Introduction

Public hearings will be conducted on these areas following the publication of these draft environmental statements. The public hearings will not deal with the entire National Forest plans, only the Wilderness Study Act areas.

This statement, therefore, covers the analysis and evaluation of the Taylor-Hilgard, West Pioneer, and Mount Henry areas as to their suitability for preservation as wilderness.

This environmental statement will also make recommendations regarding the National Forest lands suitable for addition to the Bureau of Land Management's proposed Bear Trap Canyon Wilderness. This proposal is in compliance with the 1976 Federal Land Policy and Management Act (section 603) which mandates that the Secretary of Interior conduct wilderness review of roadless public land. The recommendations for the Bureau's lands are contained in the Bear Trap Canyon Draft Suitability Report and Environmental Impact Statement, dated April 1980.

The Bureau of Land Management and the Forest Service interdisciplinary teams have coordinated the study of the BLM Intensive Inventoried Roadless Area, No. 079 (five units, 1,509 acres) contiguous to Taylor-Hilgard units S1-549 and J1-549. The recommendations for these five parcels are contained in this statement. Additionally, in conformance with CEQ policy, the Bureau of Land Management is a cooperating agency in the recommendations and the environmental analysis on the public land addressed in this Environmental Statement.

# AFFECTED ENVIRONMENT

This section provides general physical, social, and economic descriptions for three of the Montana Wilderness Study Act areas and major issues, concerns, and opportunities related to their management. These issues, concerns, and opportunities have been identified as significant by the following methods:

Issues raised by interested people attending seven workshops relating to the three areas in September 1979 throughout Montana and mail-in public comments received in the Northern Region Office 5/.

Other resource issues and management concerns are specified in laws and regulations which provide direction for National Forest policy 6/.

Several issues were specified in the Montana Wilderness Study Act itself 7/.

The following is a list of the top resource issues that were identified.

1. Existing or Proposed Wilderness--the amount of other Federal land classified or proposed as wilderness or under study as wilderness.
2. Recreation Potential--the amount and kind of recreation opportunities the area presently supports or is capable of providing. Includes off-road vehicle use and other types of recreation opportunities and travel.
3. Wildlife and Habitat--the principal game and nongame and threatened and endangered species the area supports and opportunities for improving their habitat.
4. Access and Roads Status--the type, condition, and amount of road or trail access the areas contain.
5. Economics--the relationship of costs to benefits in the extraction or utilization of Forest commodities, principally timber, and the amount of economic dependency upon these three areas.
6. Motorized Vehicle Opportunities--the type and amount of motorized use presently in the area, seasons of use, and trends.

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5/ Forest Service, Workshop Analysis Summary. USDA-Forest Service, Northern Region, 1979.

6/ Wilderness Act of 1964, National Environmental Policy Act of 1969, Forest & Rangeland Renewable Resources Planning Act of 1974, Federal Land Policy & Management Act of 1976, National Forest Management Act of 1976.

7/ Montana Wilderness Study Act of 1977, Public Law 95-150; U.S. House Report 95-620; and U.S. Senate Report 95-163.

## 8 Affected Environment

7. Watershed Management or Values--the present condition of the watershed and relative sensitivity to development activities. Also, local water supply needs.

8. Timber Potential--the volume of timber the areas are capable of producing on a sustained basis, including the location, condition of timber, potential harvest methods, and access needs.

9. Mineral Potential--the hard rock, oil, and gas potential of the areas, exploration activities, the locations, and number of claims, or leases on file.

10. Fuel and Energy Opportunities--the present use, location, and opportunities for cutting household firewood, and other energy needs such as powerline corridors.

11. Grazing Potential--the location and number of livestock grazing allotments, kinds of livestock, seasons of use, range improvements, and grazing capabilities.

12. Landownership Patterns--the amount and location of non-Federally owned land, the estimated value of such land, and opportunities for acquisition or managing potential wilderness with inholdings.

13. Protection From Fire and/or Insects and Disease--the present condition and the potential for serious fire or infestation, current or potential control, or hazard reduction measures.

14. Visual Management or Values--the esthetic values the areas contain and the protection of these values.

Issues and concerns identified as significant to determining each area's future management are analyzed in this statement. Some issues are specific to individual areas, such as the timber potential of the Mount Henry area, or fuel and energy opportunities on the Taylor-Hilgard. Other issues are common to all three areas. These include opportunities for physically handicapped and elderly persons, wilderness diversity, and wilderness quality. The common concerns are treated as a whole for all three areas in one statement. Specific issues are presented in individual statements for each area.

The social assessment section presents an analysis of Montana and for each of the three study areas separately.

Evaluation Criteria were developed from this section on the Affected Environment and are displayed in the Evaluation Criteria Section.

## PHYSICAL ENVIRONMENT

### Area Description

#### MOUNT HENRY

This 23,450-acre area is entirely National Forest land. It is located about 35 miles north of Libby in Lincoln County, Montana.

Mount Henry and a ridgeline south to Boulder Mountain dominate the area. They form its backbone along with a much lower ridge between Mount Henry and Zimmerman Hill just outside the northwestern boundary. From this divide the area extends downslope, meeting roads and timber sales at the area boundary. It is about 11 miles long, ranging in width from 2 to 6 miles.

Although topography is variable, most is gently rolling with slopes of 40 percent or under. Major exceptions are the steep rock cliffs near Fish Lakes and Mount Henry. Elevations range from about 3,000 to 7,200 feet.

Prominent landmarks include Mount Henry and the high ridge south to Boulder Mountain and seven small lakes. Major streams draining the area are Basin, Vinal, and Windy Creeks, plus the extreme headwaters of several others. All are tributaries of the Yaak River except for a small portion draining into Lake Koocanusa.

Uses that detract from the area's naturalness are significant but generally concentrated near the area boundary. These include all or portions of 26 timber sale cutting units totaling about 900 acres with 9 miles of associated access roads.

The area is heavily forested except for Mount Henry and the ridge crest south to Boulder Peak. Lodgepole pine is the dominant tree species. The site productivity of 75 cubic feet per acre per year is about average for the Kootenai National Forest, but above average when compared to other forested lands in Montana.

Major features include the high subalpine areas and lakes, Mount Henry, Hoskins Lake, Turner Creek Falls, the narrow cliffs near Fish Lakes and Vinal Creek. Use in the remainder of the area is limited by the heavily forested environment.

Past minerals prospecting and exploration has been minimal. The geologic structure indicates a low to moderate potential but is sufficiently attractive to draw future interest.





**View looking north along Purcell Ridge  
towards Mount Henry in the distance.**



Existing Wilderness or Proposed Wilderness 8/  
MOUNT HENRY

ISSUE

What other Federal lands are classified or proposed as wilderness or are under study as wilderness in the surrounding area and to what extent should they influence the classification of the study lands?

SITUATION

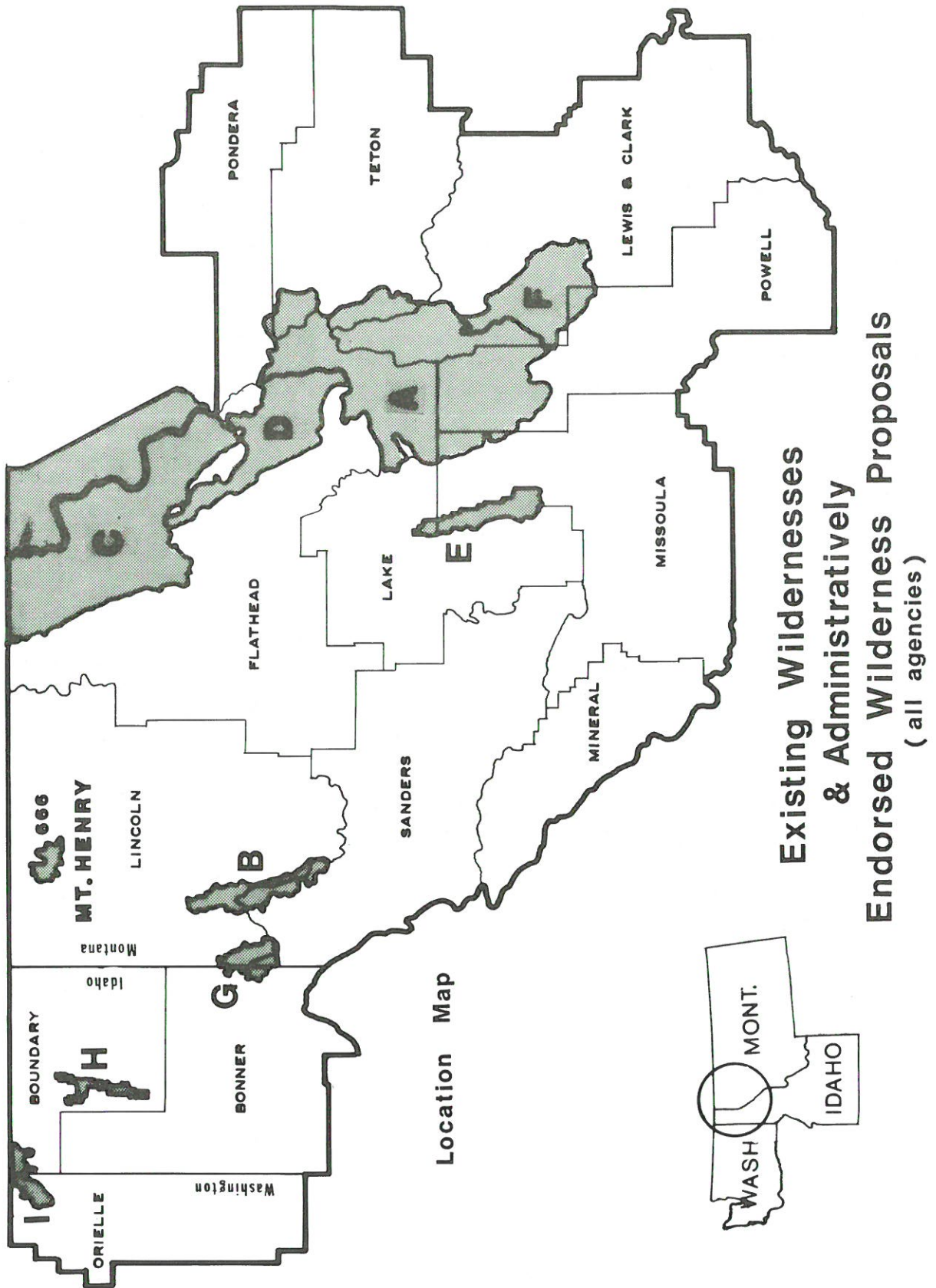
Several existing and proposed wildernesses lie in close proximity to the study area, as well as one other Montana Wilderness Study Act area. Below is an acreage summary of the areas which are identified on the following map:

Area Identi- fication	Name of Area	Agency	Acres	Status
A	Bob Marshall	Forest Service	1,009,356	Wilderness
	Additions to			
	Bob Marshall	Forest Service	102,074	Admin. Endorsed
B	Cabinet Mountain	Forest Service	94,272	Wilderness
	Additions to			
	Cabinet Mountain	Forest Service	15,580	Admin. Endorsed
C	Glacier Park	Park Service	927,550	Admin. Endorsed
D	Great Bear	Forest Service	290,571	Wilderness
E	Mission Mountains	Forest Service	73,877	Wilderness
F	Scapegoat	Forest Service	239,296	Wilderness
	Additions to			
	Scapegoat	Forest Service	38,300	Admin. Endorsed
G	Scotchman Peak	Forest Service	74,535	Admin. Endorsed
	(RARE II A&B1-662)			
H	Selkirk Crest	Forest Service	22,802	Admin. Endorsed
	(RARE II A1-125)			
I	Salmo Priest	Forest Service	42,102	Admin. Endorsed

In addition, there are 78,000 acres of National Forest land in the immediate vicinity which are under wilderness study.

Some degree of consideration will need to be given to the desirability and need for recommending that additional units be added to the National Wilderness Preservation System.

8/ Forest Service, RARE II Draft Environmental Statement and Montana Supplement, 1978; Forest Service, RARE II Final Environmental Statement, 1979; and Land Areas of the National Forest System as of September 30, 1979.



Mineral Potential 9/  
MOUNT HENRY

ISSUE

What is the hard rock, oil, and gas potential of the area and how should the area be managed for that potential?

SITUATION

Locatable Minerals

No mineral occurrences are known in the Mount Henry study area and only one claim, which may lie within the study area, has been found in courthouse records. Traces of metallic minerals, primarily lead and copper, were reported in float rock on the northwest side of Mount Henry, but the Bureau of Mines has been unable to find such mineralization. 10/ The Bureau of Mines analyzed 25 outcrop and 10 streambed samples and found no metal values deviating from those normally expected to occur.

The dominant structural feature of the Mount Henry area is a large anticline with a high angle fault along its axis. The fault is entirely contained within Prichard strata in the study area. This combination of fold, fault, and rock formation is similar to that at the New Morning Glory mines, 15 miles to the southwest. Moreover, claims with evidence of mineralization lie 1 mile north and 5 miles south of the study area along this same structure. Because of the obvious continuity of this fault through these prospects, it is probable that this portion of the Mount Henry area has been prospected by mining companies in recent years, although no claims have been recorded. The Prichard Formation contains a major stratabound deposit of lead, silver, and zinc north of the study area in Canada. Similar occurrences are being investigated by mining companies west and southeast of the study area. Although the area has been prospected by mining companies in recent years, claims have not been staked. Geological, geochemical, and geophysical studies would be needed to more precisely evaluate the potential for this type of deposit.

The Mount Henry study area is extensively underlain by strata of the Ravalli Group which includes the Revett Formation. This is the host formation for both the Spar Lake-type, copper-silver deposit, and most of the lead, zinc, and silver ore bodies of the Coeur d'Alene mining

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9/ Forest Service, Consultations with USDI-Geological Survey and Bureau of Mines, 1980; Forest Service, Instructions for the use of Minerals Information and the Numerical Rating Indices, RARE II Resource Analysis Process, 1978; and Forest Service, RARE II Minerals Data Base.

10/ Johns, W. M., Montana Bureau of Mines and Geology Bulletin 79, 1970; Geology and Mineral Deposits of Lincoln and Flathead Counties.

district of Idaho. The Revett Formation in the study area hasn't been evaluated, but the formation is known to diminish northward and no Spar-Lake deposits are known this far north. Stratabound occurrences of copper and silver are also widespread in the Empire and Spokane Formations. These formations are probably present in the eastern part of the study area, but their potential for copper-silver deposits has not been determined.

#### Oil and Gas

Inasmuch as the Mount Henry area is immediately underlain by Precambrian aged strata, it has no obvious oil and gas potential. However, 80 miles east of the study area in Glacier National Park, the Precambrian rocks have been thrust faulted at least 40 miles over younger strata that may contain oil and gas.

There is no direct geologic evidence that younger strata occur at depth in the region lying west of Glacier Park. However, it is possible that younger strata lie beneath the Mount Henry study area, in which it would have the potential for oil and gas. It is probable that oil and gas companies will be interested in the Mount Henry area if drilling confirms the presence of oil and gas farther east. In that case, seismic prospecting would proceed any drilling near Mount Henry, and drilling would be contingent on favorable seismic results.

Protection from Fire and/or Insects and Disease  
MOUNT HENRY

ISSUE

What is the present condition and the potential for serious fire and/or insect and disease infestation; what are the current protection measures, and what measures are needed?

SITUATION

This study area has had a history of insect activity. Mountain pine beetle infestations have occurred in the mid-1940's, late 1950's, and early 1960's. The present infestation began in 1972 and is still spreading. Within this unit, there are 16,575 acres of high risk lodge-pole pine; 2,250 acres are now infested. Infestation within the Yaak River drainage, of which Mount Henry is a part, increased from 19,820 acres in 1978 to 32,951 acres in 1979. It is predicted that all high-risk stands (16,575 acres) within the unit will be infested within the next 5 years. 11/

Larch casebearer is present in lower elevation stands. Needle feeding by the casebearer will result in growth loss to the larch stands.

Mount Henry lies in an area of low fire occurrence. However, large accumulations of fuels which may result from insect-caused mortality could increase the potential for future fires.

There are no current protection measures being applied to control mountain pine beetle. Reduction of insect-caused damage may be accomplished by applying cultural practices to prevent stand susceptibility or population buildups; or chemicals or mechanical procedures to prevent attack or directly suppress insect populations.

Refer to the Timber Resource map for the location and severity of the insect and disease infestations.

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11/ Forest Service, Insect and Disease Considerations for the Montana Wilderness Study Act. USDA-Forest Service, Northern Region, 1980.



Recreation Potential 12/  
MOUNT HENRY

ISSUE

What are the amount and kinds of recreation opportunities the area presently supports or is capable of supporting?

SITUATION

Recreation use in the study area is low with hiking, hunting, and fishing the primary activities. In 1976, 650 visitor days were recorded. Several trails serve the area. The Vinal Lake-Fish Lakes and the two trails leading to Mount Henry are the most popular.

Of the 23,450 acres in the Mount Henry study area, about 15,000 acres have been identified as suitable for dispersed recreation. Four thousand two hundred acres have very high or high suitability, while 10,800 acres are rated as moderate. The remainder of the area has a low rating for dispersed recreation.

Four segments of the study area have significant natural beauty and opportunities for solitude, primitive, and unconfined recreation. These include Hoskins Lake with excellent cutthroat trout fisheries; Fish Lakes Canyon and Vinal Creek with good fishing in three of the five Fish Lakes; and the high mountain ridge around Mount Henry, extending south to the vicinity of Boulder Mountain. The high ridge from Mount Henry Lookout and the southern ridge have a very pleasing subalpine setting and afford an excellent view.

The remaining acres in the study area offer limited opportunities for recreation and are situated in a rolling, heavily timbered environment.

Estimates of recreation use in the area are:

Recreation Use		
<u>Type of Use</u>	<u>Present Use</u>	<u>Potential Use</u>
Dispersed-motorized	100 RVD's	100 RVD's
Dispersed-nonmotorized (includes fishing and hunting)	1,100 RVD's	1,300 RVD's

Refer to the Recreation Resource map for the locations of use patterns.

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<sup>12/</sup> Forest Service, East Fork Yaak, South Fork Yaak, West Kootenai, and Big Creek Unit Plans: Final Environmental Impact Statements. USDA-Forest Service, Kootenai National Forest, 1973-1976.

Timber Potential 13/  
MOUNT HENRY

ISSUE

What is the timber potential of the area and where is timber management most appropriate?

SITUATION

Of the 23,450 acres in the Mount Henry study area, 19,419 acres are classified as commercial forest land while 4,031 acres are noncommercial forest land.

Under the four unit plans the Mount Henry area was allocated to various uses. Of those acres designated suitable for timber production, 14,064 were allocated for timber harvest. There are 9,569 acres of mature and 3,622 acres of immature sawtimber stands. Total standing sawtimber volume is 246,170 MBF. The estimated annual potential yield is 2.9 MMBF (million board feet).

The site productivity of 75 cubic feet per acre per year is about average for the Kootenai National Forest, but above average when compared to other forested lands in Montana.

Timber harvest activities have been numerous in the last 20 years in immediately adjacent areas. The study area contains some of the most productive timber growing sites in the Yaak River Valley, and conventional harvesting ability is generally high. Two timber sales within the study area, North Vinal and Turner Creek (25,060 MBF total volume), were halted with passage of the Montana Wilderness Study Act.

Refer to the Timber Resource map and the Economic Analysis section for the results and procedures used to determine the economically efficient areas. The following chart shows the acres within the economic analysis units by productivity classes. No attempt was made to show land productivity outside the analysis units.

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<sup>13/</sup> Forest Service, East Fork Yaak, South Fork Yaak, West Kootenai, and Big Creek Unit Plans: Final Environmental Impact Statements, 1973-1976.

18 Issues/Mount Henry

Acres by Timber Productivity Class  
Within Each Economic Analysis Unit  
Mount Henry

Economic Analysis Unit (EAU)	Total Acres Scheduled for Harvest	Productivity Class*		
		4	5	6
		85-119 cu.ft./ ac./yr.	50-85 cu.ft./ ac./yr.	20-49 cu.ft./ ac./yr.
1	3,025	1,644	1,381	
2	4,138	2,608	1,530	
3	1,872	1,256	616	
4	499	33	466	
5	3,783	1,579	2,204	
6	<u>1,275</u>	<u>1,183</u>	<u>92</u>	
Total	14,592	8,303	6,289	

\* Timber productivity classes range from 1-very high, to 6-low productivity.

Wilderness Suitability 14/  
MOUNT HENRY

ISSUE

What are the wilderness attributes of the study lands and to what extent are they suitable for wilderness?

SITUATION

The study area varies from steep, rocky cliffs near Fish Lakes and Mount Henry to generally rolling topography with less than 40 percent slopes over much of the area. An almost continuous forest cover, with lodgepole pine the dominant tree species, blankets the land.

Under the four unit plans, the area was rated for dispersed recreation suitability. Very high suitability for wilderness is found in the immediate vicinity of Mount Henry along the Vinal Creek Trail (including Fish Lakes) and in the area of Hoskins Lake--about 3,500 acres in all. Suitabilities were determined by ratings for solitude, uniqueness of natural beauty, and variety of unconfined recreational opportunities.

During the RARE II study, the 28-point Wilderness Attribute Rating System (WARS) was used. This system evaluated natural integrity, apparent naturalness, solitude opportunity, and primitive recreation opportunity. Mount Henry received a rating of 19 under this system. This rating reflects the general lack of opportunities for solitude because of roads and timber clearcut areas adjoining the Mount Henry area. For a more detailed discussion of WARS, see the Wilderness Quality section.

A constructed road exists on the south side of the Vinal Creek drainage along with five various-sized clearcuts within the study boundary. A constructed road and two clearcuts lie on the south side of Bunker Hill Creek while a large clearcut and road lie at the head of Solo Joe Creek, both within the study boundary. A constructed road and clearcut intrude into the area along the Hudson Creek drainage, and various large clearcuts intrude on the area's eastern boundary. A clearcut and constructed road lie within the boundary just west of Boulder Mountain. Two clearcuts cross into the area at the headwaters of the North Fork of Big Creek. A constructed road and four clearcuts lie in the Yodkin and Turner Creek drainages which are within the study area boundary.

Refer to the Wilderness Suitability map for the location and types of incompatible uses.

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<sup>14/</sup> Forest Service, RARE II Wilderness Attribute Rating System--A User's Manual. USDA-Forest Service, Wilderness Attribute Rating System Task Force, 1977.

Wildlife and Habitat 15/  
MOUNT HENRY

ISSUE

What are the principal game, nongame, and threatened and endangered species and what are the opportunities for habitat improvement?

SITUATION

The Mount Henry study area is generally heavily forested with mature timber broken only by open ridges and steep slopes. The timber stands provide habitat for goshawks, pileated woodpeckers, barred owls, and numerous songbirds such as warblers, vireos, and kinglets.

Game Species

Use by big game species such as deer, elk, moose, and black bear is primarily restricted to late spring, summer, and fall. Approximately 1,400 acres are suitable for big game winter range, mostly located in lower Vinal Creek and the Hoskins Lake areas.

Nongame Species

Small mammals, such as tree squirrels, snowshoe hares, weasels, and marten are common to timbered areas. In addition, larger and more mobile mammals such as coyotes, lion, bobcat, and lynx are also present.

Because of its undeveloped nature, the area may afford habitat for wolverines. In general, the area supports a healthy wildlife community but ranks only moderate in terms of species diversity when compared with other areas on the Forest.

Threatened and Endangered Species

While no essential grizzly bear or wolf habitat has been delineated in the area, their occasional presence would not be unusual due to their mobility and the proximity of other, more heavily used habitats.

Habitat Improvement

Opportunities to improve habitat are very limited because of the nature and season of wildlife use. Opportunities for big game winter range

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15/ Forest Service, East Fork Yaak, South Fork Yaak, West Kootenai, and Big Creek Unit Plans: Final Environmental Impact Statements, 1973-1976.



Improvement by burning or cutting are limited to small areas in the Vinal Creek and Hoskins Lake areas, approximately 350 acres. Timber cover is important on these winter ranges because of use by moose and whitetail deer, so opportunities for developing or improving openings are limited. Due to the value of solitude on summer ranges and the fact that forage development is not often a problem, big game summer ranges offer little opportunity for improvement.

The access required to reach areas suitable for habitat improvement to convert vegetation would probably outweigh the benefits accrued. The existing mature and old growth timber stands will provide the habitat for related wildlife species without any direct management. Allowing a limited amount of wildfire in the area to effect habitat changes would be a potential management technique.

Refer to the Wildlife Resource map for the location of the key wildlife ranges.

Area Description

TAYLOR-HILGARD

This area of about 389,424 acres (84 percent Federal) is located in south-central Montana. It borders the northwest corner of Yellowstone National Park and includes practically all of the Madison Range. The center of the area is about 40 air miles southwest of Bozeman and 20 air miles east of Virginia City in Gallatin and Madison Counties respectively. Some 99,000 acres of undeveloped lands contiguous to the study boundary were identified in RARE II for further planning and will be evaluated for wilderness as a part of this study. In addition, two administratively endorsed wilderness proposals and a primitive area are contiguous to the study boundary. These are: an 11,600-acre portion of Yellowstone National Park endorsed for wilderness, the proposed 63,000-acre Spanish Peaks Wilderness, and the 4,015-acre Bear Trap Primitive Area administered by the Bureau of Land Management.

Highways and development adjacent to the Madison and Gallatin Rivers separate this area from another MWSA area, the Hyalite-Porcupine-Buffalo Horn lying just east of the Gallatin River, and the administratively endorsed Lionhead Wilderness immediately south of the Madison River.

The study area, including additions, is about 55 miles long and 4 to 24 miles wide. Bordering the center of the study area on the east is the Big Sky Resort. Here, roads and ski area developments extend to the top of the Madison Range for about 5 miles, and one road crosses the range and extends down the Jack Creek drainage about 1.5 miles. A checkerboard ownership pattern of Burlington Northern and National Forest lands is characteristic of most of the northern two-thirds of the study area. This accounts for most of the 62,000 acres of non-National Forest land.

The study area includes five components studied in RARE II and referred to as areas E1-549, J1-549, N1-549, R1-549, and S1-549. These areas were classified for "further planning" as a result of the RARE II process. In addition, five parcels of Bureau of Land Management land, totaling 1,509 acres, are included in the study.

Topography is highly variable. Glaciated relief is characteristic of the western two-thirds with high jagged peaks, U-shaped valleys, and many cirque basins. A more subdued and moderately rolling landscape characterizes the remaining area. Elevations range from 6,000 to over 11,000 feet.

The crest of the Madison Range dominates the study area with numerous peaks rising to about 11,000 feet. Some of the prominent landmarks along the range include Lone Mountain, the Helmet, Sphinx Mountain, Koch Peak, and Hilgard Peak.



**Taylor-Hilgard area looking east  
towards Lone Mountain. Jack Creek  
drainage and Endorsed Spanish Peaks  
Wilderness in the left background.**

Skyline Ridge, bordering Yellowstone National Park, dominates the eastern portion of the study area. Elevations here are somewhat lower, up to 10,000 feet, and topography is much less rugged than the Madison Range. Prominent landmarks include Monument and Snowslide Mountains and White Peak, all about 10,000 feet in elevation.

Approximately 70 cirque lakes lie near the crest of the Madison Range. Most are in the southern portion near Hilgard Peak. Major streams draining the area are Teepee and Bacon Rind Creeks, flowing east into Yellowstone National Park; Jack, Cedar, Bear, Indian, Wolf, Moose, Squaw, Papoose, Beaver, and Cabin Creeks flowing south and west into the Madison River; Sage, Taylor, and Buck Creeks and the South Fork of the Gallatin River flowing east into the Gallatin River; and the extreme headwaters of numerous other drainages.

Wildlife and fish are abundant and diverse. The southern portion of the study area contains some grizzly bear habitat. Lower elevations near the study boundary along the Gallatin and Madison Rivers are important wintering habitat for elk, moose, deer, and bighorn sheep.

Vegetation consists of sagebrush, grasslands, and scattered trees at lower elevations. As elevation increases, lodgepole pine becomes dominant. Mountain meadows and open parkland are common at the higher elevations. The southern two-thirds of the study area near the crest of the Madison Range is dominated by exposed bedrock, sparse tree cover, and brush and grasses where soils have developed.

Uses that detract significantly from the area's naturalness are minimal and primarily concentrated along the periphery. These include about 15 miles of road on National Forest land, 6 miles on private land, and another 14 miles of primitive road. Most of the mileage is on the Gallatin River side.

Productive forest land is generally found at midslope above the sparsely forested winter range. The largest concentration is in the northern two-thirds of the study area and for the most part is coincident with the checkerboard ownership pattern. An exception to this is a relatively large block of productive forest land in the southeast portion of the study area bordering Hebgen Lake and Yellowstone National Park.

Productive forested lands of all ownerships account for about 30 percent of the total study acreage. Mountain pine beetle activity in lodgepole pine is an ever-growing problem with major infestations in Jack Creek, the neighboring Spanish Peaks Wilderness proposal, Buck and Teepee Creeks in the southeastern portion bordering Yellowstone National Park.

Major attractions are numerous lakes and peaks, the Madison Range crest, abundant and diverse wildlife, varied geology, and a wide variety of recreation opportunities. These include mountaineering, fishing, rock hounding, big game hunting, snowmobiling, and ski touring. The Big Sky snowmobile trail is a favorite. It bisects the southeastern portion of the area running from Taylor Creek south to Tepee Creek and leaves the study area near Hebgen Lake.

The study area is part of the Overthrust Belt, which may contain substantial oil and gas reserves. Oil and gas lease applications have been received for much of the area.



Access and Road Status

TAYLOR-HILGARD

ISSUE

What type, condition, and amount of road or trail access does the area contain and what is the need for roaded forms of access?

SITUATION

Public road access to the study area is afforded at a variety of points around its periphery. Generally good access is provided on the Gallatin Forest side. Potential road access to the Beaverhead Forest portion is limited because of the lack of rights-of-way across private lands to the Forest boundary.

A reasonably good system of foot, horse, snowmobile, and motorbike trails is provided within the study area. Motorbike use is restricted to dry periods so that resource damage and erosion are prevented on Gallatin National Forest trails; these same restrictions aren't presently applied on the Beaverhead National Forest portion. An increasing number of road access requests across National Forest lands to harvest timber from privately owned lands are being submitted to the Forest Service for consideration.

The Jack Creek portion of the study area has been the subject of controversy regarding development of the roadless area. The ownership pattern is checkerboard, with Burlington Northern owning about 94 percent of the private land, and the remainder owned by other small landowners.

On August 2, 1978, Burlington Northern made application to the Forest Service for access across National Forest lands in the Upper Jack Creek area. On September 19, 1979, the Forest Service denied this request, indicating that Burlington Northern had adequate opportunity to reach its lands without crossing National Forest lands.

Burlington Northern has constructed 1.5 miles of road on their own land to harvest the beetle-infested timber on its holdings in the Jack Creek drainage. This road enters the study area in the vicinity of Ulerys Lakes from the Jack Creek-West Fork Road and terminates about three-fourths of a mile north of Ulerys Lakes. About 1 mile of the road lies inside the study area.

On May 6, 1979, Burlington Northern made application to the Forest Service for a road easement in lower Jack Creek. The application was for a 2.9 mile road in the Hammond Creek area which was approved on June 19, 1980. The portion of the road on National Forest land does not penetrate the study area; however, it does as it crosses the Burlington Northern section of land.

On February 7, 1980, Burlington Northern made application for two road easements involving about 6 miles on National Forest land in the West Fork Jack Creek. Action is pending on this application.

The "further planning" status of the Jack Creek drainage precludes Forest Service activities which might impair the wilderness character. Access across National Forest land to private lands may be granted if the access doesn't cause unacceptable damage to the Forest land. Burlington Northern envisions a transportation system to serve its lands within the Jack Creek drainage. A road permit has been requested by them to facilitate the overall long-term management of these private lands. The request and need by Burlington Northern has been made more immediate by the amount of pine beetle infestation in this area and the resulting desire to salvage the dead and dying timber.

On April 30, 1979, the Gallatin National Forest Supervisor issued a special use road permit to Burlington Northern Inc. (BN) for construction of an access road across National Forest lands to intermingled BN lands in the Buck Creek-Yellow Mules area. <sup>16/</sup> This road falls within areas identified for wilderness study according to the Montana Wilderness Study Act of 1977. The Gallatin Forest Supervisor's decision was appealed to the Regional Forester and the Chief by the Montana Wilderness Association et al. The appeal was denied by the Chief of the Forest Service on April 17, 1979.

The Montana Wilderness Association et al. then filed suit in Federal District Court in Butte, Montana, to halt construction of the road. Their complaint basically contends that the granting of access by the Forest Service to intermingled private land is discretionary, rather than mandatory. After review, the Department of Justice requested the Chief of the Forest Service to suspend the special use permit pending further review of legal aspects, and receipt of an Attorney General's opinion on the question of access.

The special use permit was suspended by the Chief on August 31, 1979. On November 29, 1979, Burlington Northern Inc. filed a complaint against the United States alleging that the original United States land grants to BN's predecessor, Northern Pacific Railway Company, created an easement by necessity in favor of the lands granted, and that the United States may not deny access or fail to designate a reasonable access route. There has been no action to date on either suit. On June 23, 1980, the U. S. Attorney General issued an opinion in which he addressed several issues concerning access rights.

Briefly, he concluded:

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<sup>16/</sup> Forest Service, Buck Creek and Yellow Mule Special Use Road Permit: Final Environmental Statement. USDA-Forest Service, Gallatin National Forest, 1977.

1. The Organic Act of 1897 only grants a right of access to actual settlers.
2. The common law doctrine of easement by necessity does not apply to Federally-owned lands.
3. A right of access may be implied from the terms of a Federal land grant. Although Congress did not explicitly grant a right of access to the lands, such right of access may exist to the extent it is necessary to carry out the purpose of the congressional grant.
4. The Wilderness Act of 1964 did not modify any existing right of access whether that right exists by virtue of an implicit or expressed congressional grant.
5. The Wilderness Act requires that "adequate access" be given to a private or State landowner of property within the Wilderness Preservation System or the owner be offered to exchange the privately-owned lands for Federal lands. The Secretary of Agriculture (Forest Service) makes the determination whether to grant "adequate access" or offer a land exchange.
6. Rights-of-way, pursuant to the Federal Land Management Policy Act (FLPMA), have not changed.

On July 14, 1980, the Office of General Counsel of the Department of Agriculture issued an opinion applying to item 3 above. The General Counsel stated:

The legislative history of the grant statute and the more general history of the times demonstrate that Congress assigned enormous importance to the construction of the transcontinental railroad, and that its generous grants of lands to the railroad companies were made with the clear expectation that the lands would be used for commercial purposes. Such use depended, then as now, on adequate access across surrounding federal lands. We, therefore, conclude that Burlington Northern has a right of reasonable access to its lands implicit in the original statutory grant by Congress to the Northern Pacific Railroad in 1864. Although this access may be regulated by the Secretary in order to minimize any adverse impact on the national forest, it cannot be totally denied.

Burlington Northern's right of access to lands originally granted to the Northern Pacific Railroad is not modified by any subsequent act of Congress, including the Montana Wilderness Study Act of 1977.

Burlington Northern's Buck Creek-Yellow Mules road permit was reinstated on July 30, 1980.

Existing Wilderness or Proposed Wilderness 17/

TAYLOR-HILGARD

ISSUE

What other Federal lands are classified or proposed as wilderness or are under study as wilderness in the surrounding area and to what extent should they influence the classification of the study lands?

SITUATION

The Taylor-Hilgard study area is contiguous or near to a number of presently classified or administratively endorsed wildernesses. The following map depicts their location.

Below is an acreage summary of the areas which are identified on the map.

## Area

## Identi-

## fication

Name of AreaAgencyAcresStatus

A	Absaroka-Beartooth	Forest Service	920,377	Wilderness
	High Lakes Addition	Forest Service	41,800	Adm. Endorsed
	Yellowstone 4	Nat'l Park Service	87,237	*
	Yellowstone 5	Nat'l Park Service	50,140	*
	TOTAL		1,099,554	
B	Spanish Peaks	Forest Service	63,000	Adm. Endorsed
C	Lionhead	Forest Service	22,400	Adm. Endorsed
D	Red Rock Lakes	Fish & Wildlife Ser.	32,350	Wilderness
E	North Absaroka	Forest Service	351,104	Wilderness
	Yellowstone 6	Nat'l Park Service	418,753	*
	RARE II Additions	Forest Service	24,510	Adm. Endorsed
	TOTAL		912,117	

\* Wilderness recommendation from the Department of the Interior to the President.

17/ Forest Service, RARE II Draft Environmental Statement and Montana Supplement, 1978; Forest Service, RARE II Final Environmental Statement, 1979; Land Areas of the National Forest System as of September 30, 1979; Bureau of Land Management, Beartrap Canyon Draft Wilderness Suitability Report and Environmental Impact Statement. USDI-BLM, 1980; and Forest Service, Consultations and Coordination with the Bureau of Land Management, 1980.



<u>Area Identi- fication</u>	<u>Name of Area</u>	<u>Agency</u>	<u>Acres</u>	<u>Status</u>
F	Washakie	Forest Service	686,584	Wilderness
	Teton	Forest Service	557,312	Wilderness
	Yellowstone 10	Nat'l Park Service	406,374	*
	RARE II Additions	Forest Service	72,200	Adm. Endorsed
	TOTAL		1,723,017	
G	Yellowstone 1	Nat'l Park Service	11,640	*
	Yellowstone 2	Nat'l Park Service	316,876	*
	Yellowstone 3	Nat'l Park Service	122,019	*
	Yellowstone 7	Nat'l Park Service	182,100	*
	Yellowstone 8	Nat'l Park Service	419,582	*
	Yellowstone 9	Nat'l Park Service	7,500	*
	TOTAL		1,059,717	
H	Jedediah Smith	Forest Service	124,000	Adm. Endorsed
	Grand Teton NP	Nat'l Park Service	115,807	Adm. Endorsed
	TOTAL		239,807	
I	Gros Ventre	Forest Service	280,000	Adm. Endorsed
J	Bridger	Forest Service	392,160	Wilderness
	Fitzpatrick	Forest Service	191,103	Wilderness
	Popo Agie	Forest Service	124,000	Adm. Endorsed
	RARE II Additions	Forest Service	182,000	Adm. Endorsed
	TOTAL		889,263	

\* Wilderness recommendation from the Department of the Interior to the President.

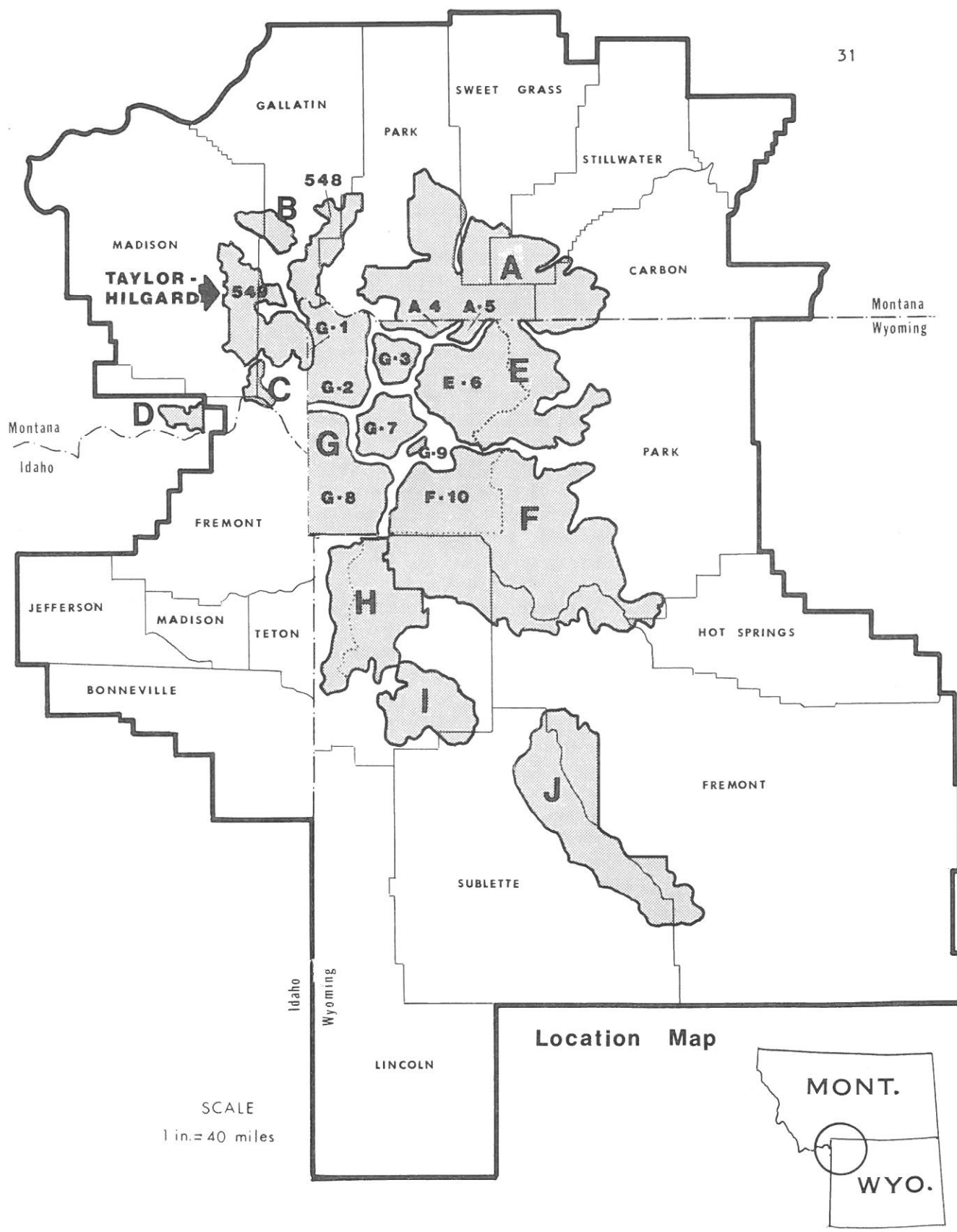
#### GRAND TOTAL

Wilderness	3,130,989
Adm. Endorsed Wilderness	3,071,938
TOTAL	6,202,927

Forest Service	4,032,550
National Park Service	2,138,027
Fish & Wildlife Service	32,350
TOTAL	6,202,927

In addition, there are 108,000 acres of National Forest land and 52,000 acres of Bureau of Land Management land in the immediate vicinity which are under study. Of the BLM land under study, 4,015 acres in the Bear Trap Canyon Primitive Area is contiguous to the Taylor-Hilgard R1-549 and J1-549 areas for about 4 miles along the National Forest boundary. The Montana Wilderness Study Act interdisciplinary team has coordinated with the BLM in the study of Bear Trap Canyon and their Intensive Inventoried Roadless Area, No. 079 (five units, 1,509 acres) contiguous to areas J1-549 and S1-549.





**Existing Wildernesses & Administratively  
Endorsed Wilderness Proposals  
(all agencies)**

Fuel and Energy Opportunities 18/

TAYLOR-HILGARD

ISSUE

What is the present use, location, and opportunities for cutting household firewood; and what other energy needs, such as energy transmission corridors, should be considered?

SITUATION

The potential for cutting household fuelwood in this area is good. However, there is little use presently because of the lack of access. There is a large amount of dead timber as a result of recent insect infestations and considerable demand in the area for this fuel. Although much of the area is some distance from the large population centers, people could be expected to cut fuelwood if public road access was provided. Residents of the surrounding areas probably would constitute a market for commercial fuelwood operations.

Potential electrical transmission corridors have been studied or identified in separate studies by the Montana Department of Natural Resources and Conservation and the Bonneville Power Administration of the Department of Energy. The State study evaluated the Montana Power Company proposal for a southwest Montana 161 kilovolt electrical transmission system and the Montana Board of Natural Resources selected a route from Big Sky Ski Resort to Ennis via Jack Creek.

Approval was granted with issuance of a certificate of environmental compatibility and public need in 1977, under the Montana Major Facility Siting Act of 1975. The Forest Service has not acted upon the application from Montana Power Company for a transmission line through Jack Creek to Big Sky since the Montana Wilderness Act study of the Taylor-Hilgard area is underway.

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<sup>18/</sup> Department of Natural Resources and Conservation, Final Environmental Impact Statement: Proposed Montana Power Company Clyde Park - Dillon 161 Kilovolt and 69 Kilovolt Transmission Lines. Montana Department of Natural Resources and Conservation, Energy Planning Division, 1976; Bonneville Power Administration, Pacific Northwest Long Range East-West Energy Corridor Study, Phase I Draft Report. Bonneville Power Administration, 1977; and State of Montana Board of Natural Resources and Conservation, Certificate of Environmental Compatibility and Public Need. Montana DNRC, 1977.

In 1977, the Bonneville Power Administration (BPA) studied potential electrical transmission corridors from Montana and Wyoming coalfields to the Pacific Northwest load centers. This study identified the Big Sky-Jack Creek corridor as feasible, from an engineering standpoint, for future electrical transmission. The BPA identified a second potential corridor from the Gallatin River up the Taylor Fork and down Indian Creek to the Madison River.

There is much interest nationally in developing new energy sources. The Department of Energy has programs which encourage development of low-head hydroelectric sites and wind generation. The Madison River Canyon which forms the southern study area boundary is known locally for strong, consistent winds.

On the southern boundary of the area is a powersite reservation 19/ of 2,204.9 acres near Earthquake Lake on the Madison River. The lands were withdrawn as a powersite reserve in April 19, 1912. The withdrawal was made under the Pickett Act of June 25, 1910, as amended by the act of August 24, 1912, which authorized the President to withdraw public lands and reserve the same for waterpower sites.

The withdrawal document, Power Site Reserve No. 184, withdrew all unsurveyed lands lying within 1 mile of the Madison River. Interpretation Order No. 14, dated April 22, 1922, described the lands to conform with the survey of the General Land Office. Public Land Order 2201, dated September 14, 1960, revoked a portion of the original withdrawal. No power development has been constructed on the reserve.

Another power project withdrawal along the Madison River in Section 4, T4S, R1E was withdrawn on November 23, 1956, under the Federal Power Act of 1920. There have been no developments on this 178.47-acre area.

Power withdrawals are open to location and entry under the mining laws subject to the provisions of the Mining Claims Rights Restoration Act of August 11, 1955. If it is determined that values for National Forest purposes exceed those for the withdrawn purposes, or will not injure or destroy powersite withdrawal values, the withdrawal can be rescinded by administrative action.

Refer to the Fuel and Energy Map for location of potential energy transmission corridors and the powersite withdrawal.

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19/ Forest Service, Land Status Records. USDA-Forest Service, Northern Region Recreation and Lands, 1980.

Grazing Potential 20/

TAYLOR-HILGARD

ISSUE

What is the present range use of the area and what is the potential for that use?

SITUATION

The Taylor-Hilgard area presently supports livestock grazing for some 2,300 cattle, 250 horses, and 980 sheep during the summer grazing season. Present use totals 11,428 animal unit months (AUM's). A slight increase to 12,059 AUM's could be achieved by more intensive range management, including additional fence and water development.

In order to manage the animals presently permitted to graze in the study area, some 46 miles of range fence and several water developments have been constructed by the Forest Service and permittee ranchers. Also, two riders' cabins have been constructed by the ranchers.

There is an additional potential grazing capacity of about 2,300 AUM's on eight established allotments which were closed in the 1960's due to range deterioration. These areas contain suitable livestock range, and could be used with proper management. Areas not included in established allotments also have potential for additional livestock grazing. These are Albino Lake Area, Slide Creek, and Teepee Creek, with an estimated capacity of 2,400 AUM's.

Within the study area are 22 cattle allotments, 3 horse allotments, and 1 sheep allotment. The cattle allotments are located on Trail Creek, Jack Creek, Cedar Creek, Shell Creek, Tolman Creek, Indian Creek, Bear Creek, Beartrap Creek, Cherry Creek, Spanish Creek, Twin Creek, Beaver Creek-Onsel Falls, Cinnamon Creek, Cache Creek, Eldridge Creek, Taylor Fork, Wapiti Creek, Sage Creek, Sun Ranch, and Trout Creek.

The administratively closed allotments are located on South Fork Cherry Creek, Muddy Basin, Bride Creek, Carrot Basin, Cub Creek, Cabin Creek, Kirkwood Creek, Red Canyon, and Bear Creek.

Refer to the Range Resource map for the location of livestock grazing allotments.

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20/ Forest Service, Hebgen Lake Unit Plan: Final Environmental Statement. USDA-Forest Service, Gallatin National Forest, 1975.

Landownership Patterns

TAYLOR-HILGARD

ISSUE

What is the present landownership pattern, current access and use, and what is the opportunity for acquisition or to manage potential wilderness with inholdings?

SITUATION

As shown on the resource maps of the area, there is considerable private land within the study area. Of the total 389,424 acres, 62,073 (16 percent) is other than Federal ownership. The private lands are in a checkerboard ownership pattern with public lands. This pattern is a result of railroad land grants made prior to the establishment of the National Forest System. The heaviest concentrations of private lands are in areas J1-549, Jack Creek, and N1-549, Indian, Buck, and Cedar Creeks.

A checkerboard landownership pattern of intermingled private and public lands is generally not compatible with present concepts of wilderness management. Usually the private landowner, whether a large corporation or a small owner, will desire, or in fact need, to utilize his land for his own benefit, profit, or enjoyment in some manner that conflicts with wilderness management.

Landownership adjustments have been made in the checkerboard areas of the Taylor-Hilgard area through past land exchanges. Some Federal land where the Big Sky Resort is located was exchanged to acquire private land in the proposed Spanish Peaks Wilderness, within Yellowstone National Park, and in a checkerboard area in the Gallatin Range.

In 1975 Burlington Northern (BN) proposed a study of a series of land exchanges aimed at trading all of its land within the Gallatin and Beaverhead National Forests for National Forest lands intermingled with its lands in western Montana. In January 1977 the Forest Service-Northern Region decided that an Environmental Impact Statement (EIS) was necessary to deal with BN's proposal. Work on the EIS was suspended November 22, 1978, to allow completion of a report to Congress pursuant to Section 1301 of the National Parks and Recreation Act, Public Law 95-625.

The Secretary of Agriculture submitted a report to Congress regarding the nature and extent of BN's proposal on February 22, 1979. In his letter to Congress which accompanied the report, Secretary Bergland directed the Forest Service to abandon preparation of the EIS and conduct a land



adjustment program in Montana in a normal manner utilizing appropriate means, including purchases, donations, or small exchanges, on a case-by-case basis.

The Region-wide landownership question is being addressed now in the Northern Region's Plan. The Regional Plan and this environmental statement are being done in concert.

The Regional Plan is reviewing overall land adjustment policies within the Region while this statement looks at the specific application of these policies to the Taylor-Hilgard study area. The possibility of purchasing large tracts of Burlington Northern lands for inclusion in the National Forest System seems remote at this time. The company plans to manage its lands for resource outputs and is not willing to sell its holdings.

Burlington Northern has made applications to cross adjacent National Forest System lands with roads in Jack Creek and Buck Creek in order to manage their timber resources. The discussion of the access question is also addressed in the Access and Road Status section.

Mineral Potential 21/  
TAYLOR-HILGARD

ISSUE

What is the hard rock, oil, and gas potential of the area and how should the area be managed for that potential?

SITUATION

The U.S. Bureau of Mines has examined the National Forest portion of the study area, except for R1-549. Their report is in progress for the remainder of the Taylor-Hilgard area. The USDI-Geological Survey has examined area J1-549, but has not yet completed its mineral analysis of the entire area.

Prospecting began in the 1880's, and two mining districts were organized near the eastern boundary of the study area. These districts, the Eldridge and Springhill, were centered on the Taylor Fork and West Fork of the Gallatin River, respectively. Gold production from placers in these areas amounted to less than 100 ounces. In 1916, the Gallatin River between the Taylor Fork and the West Fork was examined for dredging potential. Gold content ranged from \$0.18 to \$2.25 per cubic yard, but some of the gold was too finely divided to be recovered. Mining was not attempted. There have been no reports of mining activity since the 1930's.

A search for coal in the 1880's was encouraged by railroad companies seeking fuel supplies. Coal was found in Mill Creek, Red Canyon, and near the Cache Creek-Taylor Fork junction. The layers were thin and not extensive. Production was limited to local heating uses, and interest in the deposits waned by 1900. Coal-bearing lands were withdrawn from mineral entry in 1903 but were made leasable in 1920.

Rocks in the area include a thick sequence of shale, sandstone, and limestone lying over gneiss and schist. Subsequent folding, faulting, and intrusion of igneous rocks provide a favorable environment for copper deposits. Limited available information suggests that little copper actually accompanied the intrusive rocks.

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21/ Forest Service, Consultations with USDI-Geological Survey and Bureau of Mines, 1980; Forest Service Instructions for the Use of Minerals Information and for the Numerical Rating Indices, RARE II Resource Analysis Process, 1978; and Forest Service, RARE II Minerals Data Base.

Concern over the depletion of phosphate reserves in the Eastern United States led to withdrawal of potential occurrences in 1917, including lands in the study area. Phosphate and certain other nonmetals were made leasable by the 1920 Minerals Leasing Act. Layers of phosphate rock are noted in several localities which are partly traceable for 27 miles in the study area.

Phosphate-bearing horizons are found in thin-bedded chert and fossiliferous shale rocks. The horizons are about 2 or 3 feet thick on the western flanks but are thin or absent in the northern and eastern parts of the study area. At Indian Creek, the phosphate-bearing horizons are about 6 feet thick. The phosphate generally occurs as two layers of brown or black, loosely cemented aggregates of oolites, separated by low grade phosphatic shales of 1 foot or more.

A total of 5.3 million tons of indicated and 6.1 million tons of inferred submarginal resources is estimated for the traceable phosphate exposures. An additional 70 million tons may be inferred between Shedhorn Mountain and the Indian Creek exposure. Undiscovered resources are likely to occur in the south southwestern parts of the study area, and would add substantially to the resource.

Phosphate occurrences in the study area meet acid to furnace grade specifications, but the thickness is less than typical mining widths. Limited tonnage, coupled with costs of mining, processing, access, and transportation adversely affect profitable recovery in the foreseeable future. Production, capacity, and known measured reserves are adequate elsewhere in the western phosphate field and in the Eastern U.S.

About 2,205 acres of area S1-549 have been withdrawn from entry for non-metalliferous minerals and are reserved for a powersite. Refer to the Fuel and Energy Opportunities discussion in this section for more complete information on powersite withdrawals.

Another 501.55 acres in Bear Trap Canyon, Section 4, T4S, R1E, was withdrawn from all forms of mineral entry and leasing on June 1, 1971, for the protection of public recreation values.

There are approximately 40,000 acres of Gallatin National Forest land and 23,000 acres of Beaverhead National Forest land under oil and gas lease application in the study area. There are no oil and gas leases on the five parcels of BLM land. This area lies near the Overthrust Belt which has drawn much attention recently because of its oil and gas potential. The high potential for oil and gas in the Taylor-Hilgard area is a result of folded and faulted source and reservoir rocks, as well as its possible relation to the Overthrust Belt.

Motorized Vehicle Opportunities

TAYLOR-HILGARD

ISSUE

What is the current type and amount of motorized vehicle use and what is the potential for that use?

SITUATION

The area lacks developed and maintained roads; however, it is a popular area for motorbike and snowmobile users. Tepee basin, Upper Sage Creek basin, Carrot basin, Cabin Creek basin, Pika Mountain, and Buck Creek ridge are all used heavily by snowmobiles. Two of the more popular trails are machine groomed intermittently by the Montana Department of Fish, Wildlife, and Parks. These trails are the Wapiti Creek Road to Carrot basin and the lower part of the Buck Creek Ridge Trail. Most snowmobile use--and all the groomed trails--are in the Gallatin River drainage portion of the study area. Snowmobile travel is restricted to designated routes on certain portions of the study area to prevent undue disturbance to game animals on winter range at critical times. These restrictions are in Wapiti Creek, Slide Creek, Sage Creek, and Snowflake Ridge.

Motorbike use has been restricted in some areas. Motorbikes are not allowed during wet seasons and in areas of fragile soil types on the Gallatin Forest portion of the study area. The potential of both of these motorized uses is much higher than present use. To increase motorbike use would require the construction of higher standard trails.

Closures and/or restrictions on motorized vehicles exist on areas, roads, and trails generally located in Hammond Creek, Cedar Creek, Trail Fork of Bear Creek, Cherry Creek, Alder Creek, Camp Creek, Falls Creek, South Fork Spanish Creek, Spanish Peaks Primitive Area, Roaring Creek, North Fork of Gallatin River, Cascade Creek, Tepee Creek-Albino Lake Area, Wapiti Area, and Cabin Creek. 22/ These restrictions may be modified as conditions change, and are specified in current Forest travel plans.

Where four-wheel vehicles can gain access, such as lower Jack Creek, use is made of the area by those vehicles, where terrain and vegetation permit. Four-wheel vehicle travel is also permitted on an old oil-well road located between Little Wapiti Creek and Sage Creek from July 15 to August 31.

Total present motorized recreation use in the area is estimated to be about 8,700 recreation visitor days per year. Potential motorized recreation use in the study area is estimated at about 18,600 recreation visitor days per year. Most of the increased potential would result from improved access and increased snowmobile use.

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22/ Forest Service, Beaverhead Forest Travel Plan. USDA-Forest Service, Beaverhead National Forest, 1979; and Forest Service, Gallatin Forest Travel Plan. USDA-Forest Service, Gallatin National Forest, 1979.

Protection from Fire and/or Insects and Disease  
TAYLOR-HILGARD

ISSUE

What is the present condition and the potential for serious fire and/or insect and disease infestation; what are the current protection measures, and what measures are needed?

SITUATION

Records show infestations of mountain pine beetle in lodgepole and white-bark pine stands have occurred as early as 1930 in the Gallatin River drainage in North Fork of Spanish Creek, Swan-Squaw and Monument-Lodgepole Creeks. Infestation persisted through 1940. The next reported outbreak began in 1969 and is still in progress. Infestations usually persist 10 years or until the old-growth, larger diameter, high risk trees have been killed. Epidemic infestations usually occur at 20- to 30-year intervals.

Approximately 412,791 acres are infested within the Gallatin National Forest and 119,360 acres within the Beaverhead National Forest. These are gross acre figures which include commercial forest, noncommercial forest, and nonforest land for both Federal and non-Federal ownership.

The results of the mountain pine beetle survey 23/ on Taylor-Hilgard made during the summer of 1979 are tabulated below:

Mountain Pine Beetle Infestation  
Lodgepole Pine Type - Taylor-Hilgard

<u>Present infestation</u>	<u>National Forest land</u>	<u>% Increase 1978 to 1979</u>	<u>Non-Federal land *</u>
High risk	1,330 acres	11%	300 acres
Moderate risk	24,455 acres	56%	2,458 acres
Low risk	11,991 acres	23%	1,414 acres
TOTAL	37,776 acres		4,172 acres

Potential infestation

High risk	360 acres	Not available
Moderate risk	26,994 acres	
Low risk	15,434 acres	
TOTAL	42,788 acres	

\* Beaverhead NF  
portion only.

23/ Forest Service, Insect and Disease Considerations for the Montana Wilderness Study Act, 1980.



The infestation may decline in some areas; however, additional tree killing is expected to continue at least through 1982. The risk classification of lodgepole pine stands to mountain pine beetle infestation is shown on the Timber Resource Map.

There are no current protection measures being applied to control mountain pine beetle. One strategy would be to accelerate the harvest of high risk timber stands. This would also reduce the fire hazard and provide some economic benefits to the local economy.

The present potential for serious fire, insect and disease infestation in area S1-549 is considered low. The possible protection and control measures indicated above are not considered necessary for S1-549 due to the lack of dense timber.

The western portion of the Taylor-Hilgard unit, from Bear Creek to Quake Lake, has in part become defoliated by spruce budworm. Infested stands are at the lowest elevation and do not extend beyond 1 mile within the western edge of the unit boundary. In 1978, a total of 11,168 acres were defoliated by spruce budworm. The remaining portion of the area is not a problem because of its higher elevation.

Lodgepole pine dwarf mistletoe occurs throughout the timber type and has been present as long as the lodgepole. All sizes and age classes of lodgepole are affected. Based on an impact survey in 1978, dwarf mistletoe is causing an estimated loss of 7.6 cubic feet per acre per year. Dwarf mistletoe is an important factor only where maximum timber production is practiced. Impact on other multiple uses is either neutral or beneficial. Management strategies are to leave it as is, or reduce infection levels through silvicultural stand manipulations.

Large fires have been noted in the area from the earliest recorded history. In 1881 a spectacular fire burned most of the Gallatin River drainage and probably resulted in many of the present 100-year-old lodgepole pine stands.

Recreation Potential 24/  
TAYLOR-HILGARD

ISSUE

What are the amount and kind of recreation opportunities the area presently supports or is capable of supporting?

SITUATION

The undeveloped and generally unroaded nature of the area provides a wide variety of dispersed recreation opportunities. The most popular activities include backpacking, hunting, fishing, horseback riding, cross-country skiing, snowmobiling, and trailbiking.

Recreation use is considered below carrying capacity because the area is relatively undiscovered. The contiguous wilderness, proposed wildernesses, and primitive area receive larger numbers of visits because they have been more publicized.

Elk hunting is popular in the area. Two large herds migrate into the area from Yellowstone Park during the late fall and winter. The area also has a resident elk population. Deer, moose, bighorn sheep, and bear are hunted to a lesser degree. Hiking, backpacking, and backcountry camping are very popular recreation activities along most of the trails and lakes. The area is essentially an unmodified, natural environment that offers isolation from the sights and sounds of man, closeness to nature, and challenging opportunities.

Fishing at high elevation lakes is popular during the short, ice-free summer period. Lake fishing is at or near capacity for a quality catch. As future lake fishing increases, angler success will decrease.

Most of the streams inside the boundaries are too small to maintain high populations of catchable trout. However, they are spawning areas and do provide high quality water to larger streams outside the study area.

Horseback riding is popular in traveling to the more remote and higher elevations. Several outfitters and guides serve the area, catering primarily to recreationists from outside the local area. Increased use by the general public is generating some conflicts with the established dude ranch and outfitting operations. 25/

Cross-country skiers are finding the study area increasingly popular for extended tours.

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24/ Forest Service, Hebgen Lake Unit Plan: Final Environmental Statement, 1975.

25/ Montana State University, Impact of Large Recreational Developments Upon Semiprimitive Environments. MSU: Center for Interdisciplinary Studies, 1973.

Snowmobiling has become popular and is increasing. Marked and groomed trails exist south of Taylor Creek to Cabin Creek in the E1-549 portion of the Taylor-Hilgard. Open grasslands and ridgetops provide excellent opportunities for the sport. These areas are located around Flattop Mountain in Carrot Basin and along Cabin Creek. Motorbike use is popular in the summer and is permitted on most roads and trails in the area.

Until otherwise extended or rescinded, closures and restrictions are being applied to those portions of the unit receiving resource damage and where necessary to minimize recreation conflicts. <sup>26/</sup> Closed yearlong to motorized vehicles are roads and trails in Cedar Creek and Trail Fork of Bear Creek. Roads and trails in Hammond Creek are closed to vehicles over 40 inches wide.

Estimates of recreation use in the area are:

Recreation Use		
<u>Type of Use</u>	<u>Present Use</u>	<u>Potential Use</u>
Dispersed-motorized	8,700 RVDs	18,600 RVDs
Dispersed-nonmotorized (includes fishing and hunting)	63,500 RVDs	128,700 RVDs

Refer to the Recreation Resource map for the location of the recreation use areas.

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<sup>26/</sup> Forest Service, Beaverhead Forest Travel Plan, 1979; and Forest Service, Gallatin Forest Travel Plan, 1979.

Timber Potential 27/  
TAYLOR-HILGARD

ISSUE

What is the timber potential of the area, and where is timber management most appropriate?

SITUATION

The timber production potential of the Taylor-Hilgard study area is widely varied. The lower elevation moist sites have relatively high timber management potential, whereas the dry rocky ridges and grasslands have none. The National Forest land in the area contains 118,415 acres of commercial forest land ranging in wood fiber growth potential from 28 to 56 cubic feet per acre per year. In addition, there are 46,205 acres of non-National Forest land classified as commercial forest. Lands classified as noncommercial forest and nonforested on all ownerships is 223,295 acres.

Some of the area has had timber harvesting historically, mostly prior to 1950. This timber was harvested primarily for railroad ties, building logs, posts, poles, local residents' firewood, or by small portable sawmills operating onsite.

The Cherry Creek area (RARE II component R1-549) contains the largest relatively untouched stand of mature timber on the Gallatin National Forest. This area also contains a large stand of green post- and pole-size trees which are currently in demand. Selective cutting of posts and poles could effectively accomplish the silvicultural thinning need. The mature timber is heavily infested with mountain pine beetle and may be lost unless harvested. A National Forest road extends 5 miles into the area but there is no access across the adjoining private land.

Refer to the Timber Resource map and the Economic Analysis section for the results and procedures used to determine the economically efficient areas. The following chart shows the acres within the economic analysis units by productivity classes. No attempt was made to show land productivity outside the analysis units.

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27/ Forest Service, Beaverhead Forest Land Management Plans: Final Environmental Statement, 1978; Forest Service (in print), Gallatin Forest Timber Management Plan. USDA-Forest Service, Gallatin National Forest; and Forest Service, Hebgen Lake Unit Plan: Final Environmental Statement, 1975.

Acres by Timber Productivity Class  
Within Each Economic Analysis Unit  
Taylor-Hilgard, Beaverhead NF

Economic Analysis Unit (EAU)	Total Acres Scheduled for Harvest	Productivity Class*/		
		4	5	6
		85-119	50-85	20-49
		cu.ft./ ac./yr.	cu.ft./ ac./yr.	cu.ft./ ac./yr.
1	304	0	180	124
2	4,140	0	3,100	1,040
3	1,813	0	1,247	566
4	<u>3,116</u>	<u>0</u>	<u>2,500</u>	<u>616</u>
Total	9,373	0	7,027	2,346

\*/ Timber productivity classes range from 1-very high, to 6-low productivity.

Acres by Timber Productivity Class  
Within Each Economic Analysis Unit  
Taylor-Hilgard, Gallatin NF

Economic Analysis Unit (EAU)	Total Acres Scheduled for Harvest	Productivity Class*/		
		4	5	6
		85-119	50-85	20-49
		cu.ft./ ac./yr.	cu.ft./ ac./yr.	cu.ft./ ac./yr.
1	2,335	0	2,335	0
2	2,360	0	2,295	65
3	5,331	0	4,361	970
4	7,414	0	7,354	60
5	3,290	0	3,255	35
6	5,864	0	5,554	310
7	775	0	775	0
8	1,066	0	1,066	0
9	5,680	0	5,580	100
10	352	0	237	115
11	205	0	205	0
12	3,732	0	3,572	160
13	2,018	0	1,628	390
14	2,899	0	2,684	215
15	7,695	0	7,465	230
16	575	0	575	0
17	1,095	0	1,095	0
18	4,815	0	3,680	1,135
19	360	0	360	0
20	516	0	516	0
21	405	0	405	0
22	<u>675</u>	<u>0</u>	<u>675</u>	<u>0</u>
Total	58,665	0	54,880	3,785

\*/ Timber productivity classes range from 1-very high, to 6-low productivity.



Watershed Management or Values  
TAYLOR-HILGARD

ISSUE

What are the present condition and uses of the area's watershed; what is its relative sensitivity to development activities?

SITUATION

Since much of the study area lies at the higher elevations, the watersheds are very important in producing large amounts of cold, clean water to citizens downstream. Every acre within the study area produces from 0.6 to 3.0 acre-feet of water annually. (An acre-foot is equal to 326,000 gallons.) This water supports vegetation and fisheries habitat, as well as serving the needs of wildlife, domestic livestock, and people within the study area boundary.

In both the Madison and Gallatin Valleys, this water is used for recreation, irrigation, municipal water supplies for about 40,000 people, and a wide variety of businesses. Water draining from the area is used for the generation of hydroelectric power at several powerplants downstream; the closest is the Madison Dam below Ennis Lake on the Madison River. There are several thousand water rights claims to this water within Gallatin and Madison Counties which should be allocated in State Water Court in the next few years.

The study area is not subject to flooding under normal climatic conditions. Peak flows result from snowmelt in the spring (May-June) and are typically much lower on a per-acre basis than valley streams. Minimum flows usually occur in midwinter and some smaller streams freeze solid. Lakes generally lie at the higher elevations, are generally low in production of fishfood, and may remain frozen 6 months or more. They are all quite small--under 100 acres.

Water quality has been measured at about 40 sites adjacent to the study area and was found to vary over space and time. Best quality is found in areas of granitic geology and the worst in areas of eroding soft sedimentary rock, particularly during snowmelt runoff. Best water quality is defined as low sediment concentrations and low dissolved mineral content which is suitable for both the onsite and downstream water use. With increasing human use of the area, the risk of bacterial and viral water contamination and exposure to the contaminated water is also increasing. Several cases of giardiasis (severe diarrhea) in the Spanish Peaks area

have been reported to local health authorities in recent years. However, the Blue Ribbons Area-wide Planning Organization's monitoring in 1976-77 showed that Montana water quality standards for B-D1 streams are being met in the MWSA areas of the Gallatin National Forest, at least for the parameters tested.

The Blue Ribbons report 28/ also presented a map of sediment production sensitivity ratings for the study area. This map shows that about 80 percent of the area has high sensitivity to water pollution from development and 20 percent has low sensitivity, mostly in the area adjacent to the Spanish Peaks and near Hebgen Lake. A later, more intensive survey 29/ shows that the area contains about 25 percent high, 70 percent moderate, and 5 percent low sensitivity lands. The highly sensitive areas comprising 25 percent of the study area have unstable geologic and soil conditions. Natural erosion in these areas causes several drainages to carry heavy sediment loads during spring runoff.

There are seven existing snow course sites within the MWSA boundary. These are at Jack Creek, Taylor Fork, Sentinel Creek, Potomageton Park, Carrot Basin, Bear Basin, and North Fork of West Fork Gallatin River. The Taylor Fork and Carrot Basin snow courses include snow pillow installation with a 10-foot pillow, a precipitation storage tank, and 4'X4' shelter. Water development includes several headgates for irrigation ditches and the Cedar Lake, No Man Lake, and Albino Lake dams and reservoirs.

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28/ Blue Ribbons of the Big Sky Country Area-wide Planning Organization, Final Report and Water Quality Management Plan. Big Sky Country Area-wide Planning Organization. Bozeman, Montana, 1979.

29/ Forest Service, Nonpoint Pollution Survey of National Forest Lands: Report to Montana Department of Health and Environmental Sciences, Water Quality Bureau. USDA-Forest Service, Northern Region, 1977.

Wilderness Suitability 30/  
TAYLOR-HILGARD

ISSUE

What are the wilderness attributes of the study lands and to what extent are they suitable for wilderness?

SITUATION

The RARE II Wilderness Attribute Rating System (WARS) figures for the study area vary from a low of 19 for the Jack Creek area to a high of 26 for the southern part. The highest possible WARS rating is 28. Compared with other wilderness study areas in the country, this area rates in the upper half. The top 30 percent of WARS for the area scores are 22 or higher. For a more detailed discussion of WARS, see the Wilderness Quality section.

This rating indicates a fair representation of wilderness suitability for the area. The large size of the area, its variety of landforms, its unique geologic features, its scenic beauty, its abundance of large and small animals, and its undeveloped character all contribute to its high suitability for wilderness. The abundance of private lands (approximately 62,000 acres) with their potential for development could make some of the area less suitable for wilderness unless the land is acquired by the government.

Listed below are several structures and roads which may be incompatible with wilderness values. Some of the structures may have historical significance.

1. Old wooden splash dams remaining from railroad tie operations at the head of Taylor Creek and in Buck Creek.
2. The main Wapiti Creek road which separates about 1,500 acres behind the Nine Quarter Circle Ranch from the rest of the area.
3. The Lightning Creek road extending one-half mile into the area.
4. The Burlington Northern-Upper Jack Creek road extending 1.5 miles into J1-549.
5. Three small rock and earth dams and reservoirs at Cedar, No Man, and Albino Lakes.
6. Clearcut logging on Burlington Northern land in sec. 35, T. 8 S., R. 3 E., and sec. 3, T. 9 S., R. 3 E., and the Taylor Fork-Buck Creek road.

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30/ Forest Service, RARE II Wilderness Attribute Rating System--A User's Manual, 1977.

7. The Cherry Creek road extending into R1-549 for 5.5 miles.
8. Six administrative site cabins and associated buildings, and the Cinnamon Mountain fire lookout tower.
9. Six Soil Conservation Service snow courses, two of which have snow pillows and attendant structures located in Carrot Basin and Upper Taylor Fork.
10. Two jeep trails; one in Buck Creek and the other leading to Pika Mountain.
11. An abandoned oil well in Carrot Basin.
12. A dude ranch cabin and the ruins of an old tie camp in Buck Creek.
13. An old mining claim cabin in sec. 34, T. 9 S., R. 5 E.
14. A line camp cabin in the Cowboy Heaven area of J1-549.
15. The Spanish Creek road extending about 2,000 feet into R1-549 and the Spanish Creek campground.
16. The Karst Asbestos mine road which extends about one-quarter mile into R1-549.
17. The Dudley Creek road which provides access to a summer home lying about 1-1/2 miles inside R1-549.
18. The North Fork road which parallels and lies inside R1-549 for about 1 mile.
19. The Left Fork Creek road extends one-quarter mile within N1-549 and continues to private timber harvest areas outside the boundary.
20. The Cache Creek road extends for about four-tenths mile within N1-549 and continues to private timber harvest areas outside the boundary.
21. The Papoose Creek road of 2 1/2 miles and 1 mile of irrigation ditch in S1-549.

Overall, the influence of adverse impacts on natural integrity is medium, with a high feasibility of correction except for the several roads constructed with cuts and fills and metal culverts. The major part of the area is apparently natural to most visitors and offers a very high opportunity for solitude and primitive recreation. As a result of these attributes the overall suitability of the area, except for R1-549 and the Gallatin portion of N1-549, is relatively high.

Refer to the Wilderness Suitability map for the locations and types of incompatible uses.



Wildlife and Habitat  
TAYLOR-HILGARD

ISSUE

What are the principal game, nongame, and threatened and endangered species and what are the opportunities for habitat improvement?

SITUATION

An abundance of wildlife is found in the study area, including the grizzly bear and bald eagle protected by the Endangered Species Act of 1973. There are significant big game species and diverse populations of nongame species in the area. Most of the larger streams and many of the lakes contain trout.

Game Species

Major big game species in the area are elk, deer, moose, black bear, mountain goat, bighorn sheep, and mountain lion. In the upland game and waterfowl categories are snowshoe hare, blue grouse, Canada goose, mallard, and golden eye. Furbearers include marten, otter, mink, beaver, coyote, bobcat, badger, raccoon, fox, lynx, and wolverine. Common trout species are the rainbow, cutthroat, golden, and brook trout.

The most hunted game species in the Taylor-Hilgard is elk. During the summer and fall elk concentrate in the upper basins of Teepee Creek, Cabin Creek, Wapiti Creek, Beaver Creek, and Taylor Fork. The upper Gallatin migratory elk herd summers in Yellowstone National Park and migrates to winter and calving areas in the study area. Management and conservation of this herd is of national significance.

There is winter range for deer, elk, and bighorn sheep on the western side of the Madison Range along the National Forest boundary. Moose winter in most of the major stream bottoms. The high lakes of the Hilgards are popular fisheries. These lakes generally don't sustain trout populations and must be restocked.

Nongame Species

A wide variety of mammals, birds, amphibians, and reptiles, numbering over 200 species, are not classified as game animals. Nongame species of interest include the golden eagle, sandhill crane, numerous shorebirds, and cavity nesting species.



Threatened and Endangered Species 31/

The grizzly bear and bald eagle are protected under the Endangered Species Act of 1973. Both are found in the study area. Other species classified under the Act aren't resident in the area.

Grizzlies, classified as "threatened," may be found in the southern portion of the study area. Their status is "resident." Essential habitat for the grizzly bear is shown on the Wildlife Resource map. Approximately 95,000 acres in the study area were proposed as essential habitat in 1977.

Bald eagles, classified as "endangered," are winter residents in the study area. They are found primarily along the Gallatin and Madison Rivers and may be observed from the study area.

Habitat Improvement 32/

Habitat improvement in the study area may include modifying forest and rangelands to favor diversity and maximum production of palatable berries, grass, and flowering plants; improving manmade lake facilities and waterfowl habitat; protecting nest sites of species using specialized habitats, such as sandhill cranes; and improving lake and stream fisheries. Areas which may have potential for big game habitat improvement are Taylor Fork, Wapiti Creek, Albino Lake, and winter game ranges along the eastern and northern boundaries of the study area. There are an estimated 127,200 acres suitable for habitat improvement within the study area.

Habitat improvement potential for the grizzly bear exists where forage production can be increased without diminishing species cover requirements. Carrot Basin is such an area.

Refer to the Wildlife Resource map for the location of key ranges and areas suitable for habitat improvement.

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31/ Forest Service, Essential Habitat Proposal - Grizzly Bear. USDA-Forest Service, Northern Region, 1978; Forest Service, Hebgen Lake Unit Plan: Final Environmental Statement, 1975; Forest Service, Criteria for Grizzly Bear Critical Habitat Identification: A State of the Art Compendium. USDA-Forest Service, Northern Region, 1975.

32/ Forest Service, A Program for Fish and Wildlife Habitat on the National Forests in Montana. USDA-Forest Service, Northern Region, 1978.

Area Description

WEST PIONEER

This study area is about 148,150 acres. All but 192 acres are National Forest land. It is located about 40 air miles northwest of Dillon in Beaverhead County, Montana.

Roads and development along the Wise River and Grasshopper Creek generally bisect the two relatively short East and West Pioneer Mountain ranges. Approximately 94,000 acres of the East Pioneer Mountains was recommended for wilderness classification in RARE II.

Topography is not highly variable in the West Pioneer area. The landscape is generally gently rolling and elevations vary from about 6,500 to 9,500 feet.

The crest of the West Pioneer range dominates the area with Odell, Shaw, and Stine Mountains rising to about 9,500 feet. Approximately 10 cirque lakes lie near the crest, and numerous wet meadows adjacent to stream courses dot the landscape. Major streams draining the area are Steel, Doolittle, Pattengail, Wyman and Warm Springs Creeks, and the extreme headwaters of numerous others. These are tributaries of the Big Hole and Wise Rivers.

Major attractions include lakes, meadows, and crest of the mountain range. Big game hunting is very popular. Extensive snowmobiling occurs during the winter months.

Vegetation consisting of sagebrush and mountain grasslands covers about 20 percent of the study area near the boundary. Sedge-covered wet meadows are in the high basins and adjacent to stream courses. Lodgepole pine is the dominant tree species blanketing most of the remaining area except for whitebark pine on high ridgetops.

Approximately 60 percent of the area is heavily forested with lodgepole pine. Although the mountain pine beetle population is currently endemic, approximately three-fourths of the acreage is considered highly susceptible to beetle infestations due to advanced age of the timber. Site productivity on about half the total acreage is average for the Region, with remaining acreage below average.

Past and current minerals activity, particularly in the central portion, suggest a high potential with a probable increase in exploration activities.

Uses that detract significantly from the area's naturalness are concentrated at several points along the periphery. These include all or portions of four timber sale cutting units totaling 413 acres with about 4.25 miles of associated access roads in Alder Creek, and about 4 miles of primitive road in Pattengail and Odell Creeks.



West Pioneer area looking west up  
Pattengail Creek.

Access and Road Status

WEST PIONEER

ISSUE

What type, condition, and amount of road or trail access does the area contain and what is the need for roaded forms of access?

SITUATION

Jeep trails provide access up Pattengail Creek to Cow Creek, up Lacy Creek to Bobcat Creek, and up Wyman Creek to Odell Creek. The Lacy Creek Trail is closed to four-wheel vehicles at Bobcat Creek. A jeep trail goes to Jerked Prairie, a 158-acre private homestead managed for livestock forage. A four-wheel road connects Steel Creek to Stewart Meadows. Cross-country vehicle access is available on lower elevations over a large portion of the area.

Trails extend west from the Wise River-Polaris Road #484 to the Big Hole Basin and link up with roads from the west. The trails were designed for light to medium foot and horse traffic. Present use, including trail bikes and off-road vehicles, is causing localized erosion. This is caused by a high perched water table, poor trail location, steep grades, or a combination of these factors. This problem has been partially remedied by road closures in the Forest travel plan. Localized heavy trail maintenance, erosion control work, and reconstruction are needed if present levels of use are retained.

Access to the area is provided by nearby State and Federal highways. Roads and developments along the Wise River and Grasshopper Creek generally provide ready access to the eastern portion of the area. On the remaining portions there is public access on a few roads serving the area, but most roads are controlled by private landowners. The main Steel Creek Road and campground is a primary access point on the area's west side.

Although a major network of trails provides entrance to the entire area, additional road rights-of-way are needed to insure public access to the area boundary on the west side. Primary and secondary road construction would be necessary if intensive timber management was implemented.

About 4.25 miles of access road is associated with the Alder Creek Timber Sale. Also, a jeep trail leads to Homestead Entry Survey 447, but does not traverse the wilderness study area.

In December 1979, the Chief of the Forest Service designated the Pioneer Loop Trail as a National Recreation Trail. This trail enters the West Pioneer area in Section 16, T1S, R12W near Roundtop Mountain and traverses the West Pioneer Divide. It terminates at the Lacy Creek Road at Section 2, T3S, R13W. The total length is 35 miles with 30 miles within the study area. Refer to the Wilderness Suitability map for location of the jeep trails, and the base map for permanent roads.

Refer to the Wilderness Suitability map for location of the jeep trails, and the base map for permanent roads.



Existing Wilderness or Proposed Wilderness 33/

## WEST PIONEER

ISSUE

What other Federal lands are classified or proposed as wilderness or are under study as wilderness in the surrounding area and to what extent should they influence the classification of the study lands?

SITUATION

Several existing and proposed wildernesses lie in close proximity to the study area. Below is an acreage summary of the areas which are identified on the following map.

## Area

## Identi-

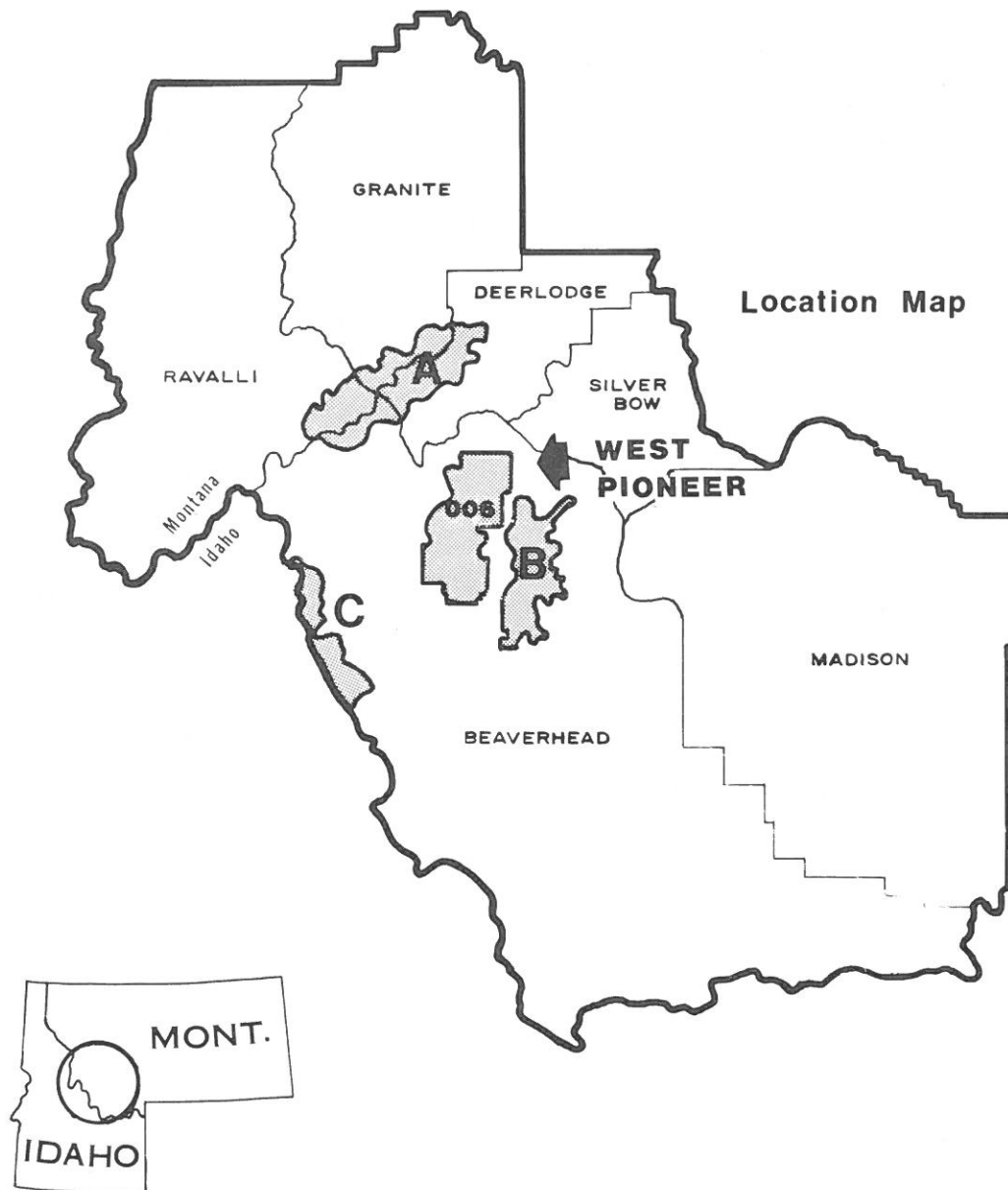
<u>fication</u>	<u>Name of Area</u>	<u>Agency</u>	<u>Acres</u>	<u>Status</u>
A	Anaconda Pintler	Forest Service	157,874	Wilderness
	Additions to			
	Anaconda Pintler	Forest Service	15,952	Admin. Endorsed
B	Torrey Mountain			
	(RARE II 01-008,			
	E. Pioneer)	Forest Service	93,859	Admin. Endorsed
C	Big Hole (RARE II			
	11-943)	Forest Service	53,375	Admin. Endorsed

In addition, there are 276,000 acres of National Forest land in the vicinity which is under wilderness study.

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33/ Forest Service, RARE II Draft Environmental Statement and Montana Supplement, 1978; Forest Service, RARE II Final Environmental Statement, 1979; and Land Areas of the National Forest System as of September 30, 1979.

## Existing Wildernesses & Administratively Endorsed Wilderness Proposals



## 58 Issues/West Pioneer

### Fuel and Energy Opportunities

#### WEST PIONEER

##### ISSUE

What is the present use, location, and opportunity for cutting household firewood, and what other energy needs, such as energy transmission corridors, should be considered?

##### SITUATION

The cutting of household firewood within the area has been negligible because access is lacking. The potential for cutting fuelwood is good. There is a large amount of dead, down and standing timber from current and past insect infestations. The area was swept by a mountain pine beetle epidemic in the 1930's. Although much of the area is some distance from large population centers, people would travel to cut fuelwood if public access were provided.

There is no expressed need to consider the area for an energy transmission corridor.

### Grazing Potential

#### WEST PIONEER

##### ISSUE

What is the present range use of the area and what is the potential for that use?

##### SITUATION

All or portions of 14 cattle allotments are within the study area. Livestock grazing occurs primarily on open grassland at lower elevations, and wet meadows at higher elevations. Grazing use amounts to about 5,000 Animal Unit Months (AUM's) during the summer season with a slightly higher potential with intensive management. A 158-acre private homestead, located in Jerked Prairie, is waived to the Forest Service and managed as a portion of the Jerked Prairie Livestock Allotment.

Livestock movement is limited by downfall in many overmature timber stands. Range improvements to meet potential or sustain existing AUM's could include fences for pasture management, water developments to improve distribution, undesirable plant control in selected areas, and cultural practices such as sagebrush control.

Refer to the Range Resource map for livestock allotment locations.

Landownership Patterns

WEST PIONEER

ISSUE

What is the present landownership pattern, current access and use, and what is the opportunity for acquisition or to manage potential wilderness with Inholdings?

SITUATION

The present landownership pattern is a solid block of National Forest land, except for the 158-acre homestead (Homestead Entry Survey 1017) located in Jerked Prairie and 34 acres of a homestead (Homestead Entry Survey 447) on Warm Springs Creek, both managed for livestock forage. A jeep road provides access to Jerked Prairie. This trail traverses about three-fourths mile of the study area. Access to the 34 acres on Warm Springs Creek does not enter the study area. The opportunity for acquisition of these areas is probably not favorable.

Mineral Potential 34/  
WEST PIONEER

ISSUE

What is the hard rock, oil, and gas potential of the area and how should the area be managed for that potential?

SITUATION

The mineral potential of the West Pioneer study area is high. The regional setting with respect to mining districts and geologic features, the local geology so far as it is known, the known mineral deposits, and the mineral prospects being actively explored all show clearly that the entire study area is favorable for the discovery of additional mineral deposits. Figure 1 shows the location of mines, prospects, and claims in the study area.

The study area is in a highly mineralized region. Many very productive mining districts are associated with the Boulder, Tobacco Root, Pioneer, and Philipsburg batholiths and with many smaller bodies of intrusive, igneous rocks. Butte, Highland, Rochester, Silver Star, Sheridan, Argenta, Bannack, Hecla, and Philipsburg Districts, all within 40 miles of the study area, have each produced more than \$2 million worth of metals. These are mainly gold and silver, except for copper at Butte. Lead, zinc, tungsten, and manganese have also been mined in large quantities in the surrounding region. The locations of several nearby tungsten deposits are shown on figure 1. After the discovery of the large molybdenum deposit at Cannivan Gulch a few miles east of the study area, other attractive prospects for molybdenum have been found in the Pioneer Mountains and have been or are being investigated by mining companies.

The geology of the study area is not well known, geologic features indicate the area is favorable for the occurrence of gold, silver, tungsten, molybdenum, copper, lead, and zinc. The potential for oil and gas production is probably low. However, a test well southwest of Wisdom has shown indications of oil and gas, and lies in a different geologic setting.

The Pioneer batholith extends into the area, and several other bodies of intrusive rock are known. The tungsten deposit at Calvert Hill is at the boundary of one of these bodies, and analogous favorable relations are expected to be found within the area.

The study area is currently being actively explored for molybdenum deposits. Two molybdenum prospects, Armor Creek (Odell claims) and Stone Creek (Cob claims) are currently active drilling programs. Other molybdenum prospects, such as Tim Creek, are present within and adjacent to

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<sup>34/</sup> Forest Service, Consultations with USDI-Geological Survey and Bureau of Mines, 1980; Forest Service, Instructions for the Use of Minerals Information and the Numerical Rating Indices, RARE II Resource Analysis Process, 1978; and Forest Service, RARE II Minerals Data Base.



the study area. Of the 290 active mining claims in the area, 255 are in the Odell and Cob claim groups. The Armor Creek prospect involved Cyprus Exploration Company and Molycorp (formerly Minerals Exploration Company). Drilling began in 1972 and is continuing. The Stone Creek prospect was staked by Bear Creek Mining Company in 1973 and restaked by Utah International in 1978. Drilling by Utah International began in 1979 and will continue in 1980.

Mining in the study area has been confined to small deposits of gold and silver in veins. An economic analysis of mineral resources was made to estimate the in-place value of gold, silver, and molybdenum that may be present in exploitable concentrations in the area.

#### Gold and Silver Resources

Four of the 11 vein deposits shown on figure 1 are believed to contain resources of silver and gold that are potentially economic. These deposits are small, narrow veins in quartz monzonite or quartzite. This analysis was made using a price of silver at \$30 per troy ounce and of gold at \$550 per troy ounce. Table 1 shows the number of tons of ore that each deposit contains estimated at a high (95 percent) and low (5 percent) probability. Also shown is the dollar value of ore in each probability category, assuming the ore would be shipped directly to a smelter (approach 1) or concentrated near the mine before shipping (approach 2).

Mining of such deposits is typically underground by small-scale drifting or cut and fill stoping. The ore would probably have to be hand sorted. The cost of mining and sorting is estimated to be about \$200 per ton of sorted ore. Average transportation charges to smelters at Anaconda or East Helena, Montana, would be about \$20 per ton. Charges for smelting are figured by a complex formula according to composition and grade of ore; an average charge would probably be about \$80 per ton. Thus, the total cost of production (not including road construction) would be \$300 per ton, and only ore that is worth more than \$300 per ton could be profitably mined. The grade of ore necessary to achieve this return can be calculated by using the \$300 cost of production and the payment formulas used by the smelters as follows:

For gold, \$300 = (assay value - 0.02 oz) (0.925\*\$550-\$1)

therefore, assay value = 0.61 ounce per ton

For silver, \$300 = (assay value - 1.0 oz) (0.95\*\$30-\$0.07)

therefore, assay value = 11.6 ounces per ton.

Gold and silver commonly occur together so that some fraction of each of the two assay values would apply depending on the ratio of gold to silver in the ore.

If the ore were concentrated near the mines, the costs of production would be decreased appreciably, and hence the value of the ore would be increased as shown on table 1. The concentration process would involve heap leaching using cyanide solution, precipitation on charcoal, and refining. Recovery by this process is assumed to be 85 percent of the values in the unmined ore, and would cost about \$20 per ton. Transportation cost would be reduced to \$5 per ton, and smelting charges would be eliminated.

Using these calculations discounting revenues and costs at 4 percent, the expected value of gold and silver resources is about \$5.4 million if the ore is not concentrated at the site, or \$7.6 million if the ore is concentrated.

A subjective assessment by Forest Service geologists indicates that an equal amount of gold and silver is present in deposits not yet discovered. Because of costs related to their discovery and because production will begin at a later point in time, the inplace value of undiscovered deposits is estimated to be only 60 percent of the value of the known prospects.

#### Molybdenum Resources

Molybdenum resources in the study area were calculated using the tonnage and grade of nearby molybdenum deposits as typical of those that might be found in the West Pioneer. The Cannivan Gulch and Thompson Creek (Custer County, Idaho) deposits each contain about 200 million tons of ore having an average grade of 0.1 percent molybdenum. Using these figures of tonnage and grade and considering other factors such as royalty rate, recovery ratio, and price, a monetary value can be placed on molybdenum deposits inferred in the study area. Royalty rates are assumed to be about 4 percent, recovery is typically 75 percent, and the price used is \$9 per pound. Thus, the net worth of a 200-million-ton ore body containing 0.1 percent molybdenum can be calculated as follows:

$$\begin{aligned}\text{Net worth} &= \text{royalty rate} \times \text{tonnage} \times \text{grade} \times \text{recovery ratio} \times \\ &\quad (\text{price/lb}) + \text{lbs/ton} \\ &= 0.04 \times (200 \times 10^6) \times 0.001 \times 0.75 \times 9 \times 2,000 \\ &= 108 \text{ million,}\end{aligned}$$

or 3.6 million per year, assuming a 30-year lifetime for the ore body. The present value would be about \$62.25 million after discounting to 1980 at a rate of 4 percent, and assuming production begins in 1989.

Of course, not all prospects that are drilled become producing mines. Generally, about 1 mine results from 10 prospects which are sufficiently promising to justify drilling. The estimated value of the molybdenum resources in the Stone Creek and Armor Creek prospects can be calculated as follows:

$$\begin{aligned}\text{Resources} &= 0.1 (\text{probability}) \times 2 \text{ deposits} \times \$62.25 \text{ million per} \\ &\quad \text{deposit.} \\ &= 12.45 \text{ million.}\end{aligned}$$

Favorable geology indicates that other molybdenum deposits are probably present in the study area. Although evaluating resources in undiscovered deposits is less precise than in known prospects, it can be done by making certain assumptions. A subjective assessment by Forest Service geologists indicates a 25 percent probability for one molybdenum deposit

and a 5 percent probability of two molybdenum deposits, in addition to the Stone Creek and Armor Creek prospects. The present net worth in place of such a hypothetical deposit is 0.66 percent of the value placed on the known prospects.\* The present net worth of the undiscovered molybdenum resource is calculated to be \$14.4 million.

#### Summary

Probabilistic techniques are used to estimate the in place value of part of mineral resources in the study area to be made from knowledge of the geology. Molybdenum is probably the most valuable mineral resource, and gold and silver are of lesser value. The gross net worth of these commodities is believed to be over \$37.2 million. Information on copper, lead, zinc, tungsten, and oil and gas is not presently available in a form that would permit calculation of the in place value of these resources.

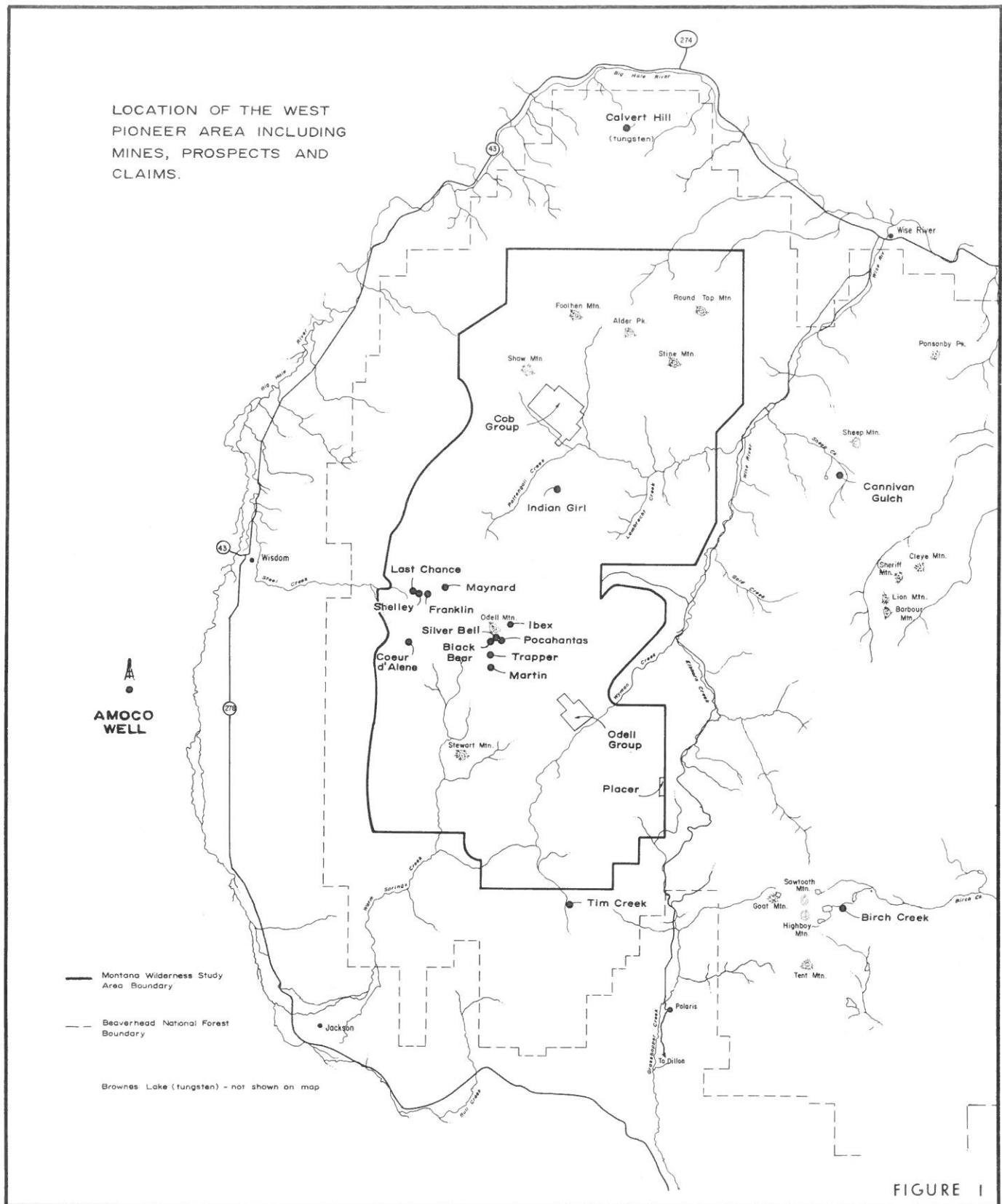
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\* Assuming a 20 percent reduction in value due to the cost of discovery and a further 18 percent reduction as a result of the revenue stream starting later.

Table 1. Estimated Tonnage and Dollar Value of Silver and Gold Veins in the West Pioneer Study Area

DEPOSIT	ORE RESERVES-		APPROACH 1		APPROACH 2	
	M TONS					
	95% proba- bility	05% proba- bility	\$ value 95% proba- bility	\$ value- 5% proba- bility	\$ value- 95% proba- bility	\$ value- 5% proba- bility
BLACK BEAR	5	50	341M	3,410M	660M	6,600M
COEUR D'ALENE	4	40	1,420M	14,200M	1,596M	15,960M
FRANKLIN	4	40	813M	8,128M	1,076M	10,760M
MARTIN	5	50	2,794M	27,940M	3,080M	30,800M
TOTALS		Rounded	5,000M	50,000M	6,412M + 7,000M <u>35/</u>	64,120M + 70,000M <u>35/</u>

35/ Adjustment for added production from small high-grade portions of deposits that can be produced only under assumptions of approach 2.





Motorized Vehicle Opportunities

WEST PIONEER

ISSUE

What is the current type and amount of motorized vehicle use and what is the potential for that use?

SITUATION

Motorized vehicle use on the area generally consists of trail cycling and snowmobiling. Snowmobiling is popular in Anderson Meadows, Upper Pattengail Creek, Upper Lost Horse Creek, Stewart Meadows, Steel Creek, and the trail to Odell Lake.

Present motorized recreation use in the area is about 700 Recreation Visitor Days (RVD's) and the potential is for 7,300 RVD's for all types of motorized uses. Motorbiking has been restricted to assure resource protection. To increase motorbike use would require the construction of higher standard trails.

Snowmobiling has grown rapidly in the past few years. The area most popular with snowmobilers is located generally in the southern two-thirds of the area from Pattengail Creek and Steel Creek south to the study boundary.

Protection from Fire and/or Insects and Disease 36/  
WEST PIONEER

ISSUE

What is the present condition and the potential for serious fire and/or insect and disease infestation, what are the current protection measures, and what measures are needed?

SITUATION

Beetle infestations in high risk lodgepole pine date back to 1926 and continued through 1935 in the West Pioneer Range. During that period, over 1 million lodgepole pine were killed. Infestation has remained at endemic status since 1935.

Within the study area, there are 63,800 acres of high risk lodgepole, 33,835 acres of moderate risk, and 3,264 acres of low risk lodgepole pine. Infestation is predicted to occur within the next 3 years. Unless the high risk stands can be logged, there is a high probability that a good portion of the moderate risk and some of the low risk stands could be killed. Over 90 percent of the volume in the high risk stands will be killed once the epidemic occurs. There are no current protection measures being applied to control mountain pine beetle. Harvesting high risk stands could also reduce the risk of fire.

Spruce budworm has never been a problem in this area. Most of the area is lodgepole pine and the elevation too high for budworm infestation.

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<sup>36/</sup> Forest Service, Insect and Disease Considerations for the Montana Wilderness Study Act, 1980.

Recreation Potential  
WEST PIONEER

ISSUE

What are the amount and kinds of recreation opportunities the area presently supports or is capable of supporting?

SITUATION

The undeveloped and relatively roadless nature of the area provides opportunities for a wide variety of dispersed recreation, especially hunting, fishing, snowmobiling, and cross-country skiing. Major recreational uses are hunting and fishing in the high mountain lakes. Recreation use currently is about 10 percent of the area's potential.

<u>Type of Use</u>	Recreation Use	
	<u>Present Use</u>	<u>Potential Use</u>
Dispersed-motorized	700 RVD's	7,300 RVD's
Dispersed-nonmotorized (includes fishing and hunting)	2,900 RVD's	28,500 RVD's

Maverick Mountain Ski area is located adjacent to the study area, and a well-developed trail system enhances cross-country skiing in the study area. All of the dispersed recreation uses that are listed occur extensively over the study area.

Refer to the Recreation Resource map for the location and types of recreation use in the area.

Timber Potential 37/  
WEST PIONEER

ISSUE

What is the timber potential of the area, and where is timber management most appropriate?

SITUATION

Approximately 60 percent of the area is heavily forested, with lodgepole pine the dominant tree species. Some timber harvesting occurred in Alder Creek about 1976. This harvesting included all or portions of Alder Creek timber sale cutting units, totaling 413 acres, and 4.25 miles of associated access roads.

The area contains 127,857 acres of commercial forest land, 10,613 acres of noncommercial forest, and 9,522 acres of nonforest. The commercial forest land has an estimated total standing net volume of 696,658 MBF (thousand board feet). The present annual net growth is 17,952 MBF. There is a potential annual growth of 46,146 MBF. Of the 127,858 acres of commercial forest land, about 88,222 acres are suitable for management. Suitable productive timber sites occur throughout the area. Although the mountain pine beetle population is currently endemic in the study area, approximately two-thirds of the forested acreage is considered highly susceptible to beetle infestations in the near future.

Refer to the Timber Resource map and the Economic Analysis section for the results and procedures used to determine the economically efficient areas. The following chart shows the acres within the economic analysis units by productivity classes. No attempt was made to show land productivity outside the analysis units.

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37/ Forest Service, Montana Wilderness Study Act, Timber Data for Economic Analysis, USDA-Forest Service, Northern Region, 1979.

Acres by Timber Productivity Class  
Within Each Economic Analysis Unit  
West Pioneer

Economic Analysis Unit (EAU)	Total Acres Scheduled for Harvest	Productivity Class*		
		4	5	6
		85-119	50-85	20-49
		cu.ft./ ac./yr.	cu.ft./ ac./yr.	cu.ft./ ac./yr.
1	3,316	0	2,991	325
2	2,984	0	2,674	310
3	545	0	235	310
4	4,672	0	4,129	543
5	6,940	0	6,230	710
6	5,302	0	4,749	553
7	3,633	0	3,202	431
8	1,551	0	1,414	137
9	3,408	0	2,801	607
10	1,888	0	1,696	192
11	9,581	0	9,107	474
Total	43,820	0	39,228	4,592

\* Timber productivity classes range from 1-very high, to 6-low productivity.



Watershed Management or Values  
WEST PIONEER

ISSUE

What are the present condition and uses of the area's watershed; what is its relative sensitivity to development activities?

SITUATION

Since much of the study area lies at the higher elevations, the watersheds are very important in producing large amounts of cold, clean water to citizens downstream.

Water sustains fish populations in most larger streams within the study area. Water is an important use outside the National Forest and contributes to irrigation of land in the Big Hole Valley. Water also is used downstream for irrigation and hydroelectric power.

Approximately 70 percent of the precipitation within the study area is snow, with February to April the heaviest snow months. The present condition of the area's watershed is good. State water quality standards classify the water as suitable for drinking, culinary, and food processing purposes after simple disinfection.

The study area is not subject to flooding under normal climatic conditions. Peak flows result from snowmelt in the spring (May-June) and are typically much lower on a per-acre basis than valley streams.

Minimum flows usually occur in midwinter and some smaller streams freeze solid. Lakes generally lie at the higher elevations and may remain frozen 6 months or more. They are all quite small, under 100 acres in size. One snow course (Foolhen) and a Soil Conservation Service snow pillow are located in section 11, T. 1 S., R. 13 W.

Current primary uses of water are wildlife habitat, dispersed recreation, and livestock grazing. Two mining claims in the head of Warm Springs Creek have received some use, and additional claims have been located in the last several years. Although the area is virtually roadless, some trails and open areas receive limited vehicle use for prospecting and recreational activity. Except for the rocky uplands and the numerous stringers of wet meadows, about 60 percent of the area can be developed with minimum adverse effects.

The 1977 Montana Legislature passed House Joint Resolution 80 instructing the Department of Natural Resources and Conservation to study the feasibility of off-stream storage on the upper Big Hole River 38/. Of the sites recommended for further study, the old Pattengail Creek site was the most favorable.

Water released from a reservoir on Pattengail Creek (sections 9 and 10, T. 2 S., R. 12 W.) would yield 7,145 acre-feet annually from a reservoir of 9,040 acre-feet. The surface area of the reservoir would be approximately 400 acres. Originally this was the site of a Montana Power dam constructed in 1901 which failed in 1927. The Bureau of Reclamation believes the dam could be expanded to 10,000 acre-feet or more, and be filled and released twice yearly. This site could provide additional irrigation water and a minimum flow in Wise River.

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38/ Department of Natural Resources and Conservation, Potential Off-stream Reservoir Sites in the Big Hole River Basin. Montana Department of Natural Resources and Conservation, Water Resources Division, 1978.

Wilderness Suitability 39/

WEST PIONEER

ISSUE

What are the wilderness attributes of the study lands and to what extent are these suitable for wilderness?

SITUATION

The roadless area would rate high in naturalness to most visitors, only limited indicators of unnaturalness exist. The overall opportunity for solitude in the area is outstanding, and the overall opportunity for primitive types of recreation is very high. On a composite basis, the area is considered highly suitable for wilderness.

The Wilderness Attribute Rating System (WARS) used in RARE II shows the rating of this study area to be 26 in a range of 1 to 28. For a more detailed discussion of WARS see the Wilderness Quality section.

Uses that detract from the area's naturalness are concentrated at several points along the periphery. These include all or portions of the Alder Creek Timber Sale cutting units totaling 413 acres with 4.25 miles of associated access roads in Alder Creek, and about 4 miles of primitive road in Pattengail and Odell Creeks.

The Foolhen administrative cabin (12'x16') lies near the northern boundary and is used primarily by Forest Service trail maintenance crews when they work in the area. A Soil Conservation Service snow course and snow pillow are located in the same vicinity.

The overall effects of these uses on natural processes are low; generally less than 15 percent of the area is impacted. The duration of impact is usually less than 5 years with high or very high feasibility for correction.

Refer to the wilderness suitability map for the location and types of incompatible uses.

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39/ Forest Service, RARE II Wilderness Attribute Rating System--A User's Manual, 1977.

Wildlife and Habitat  
WEST PIONEER

ISSUE

What are the principal game, nongame, and threatened and endangered species, and what are the opportunities for habitat improvement?

SITUATION

A variety of wildlife is found in this study area. The major game animals include elk, mule deer, moose, mountain goats, Franklin grouse, blue grouse, eastern brook trout, yellowstone cutthroat trout, rainbow trout, and southern grayling.

Game Species

The area provides widespread elk summer range; however, elk favor the heads of drainages. The old homestead in Jerked Prairie is a very important elk calving site. Winter snows tend to push the elk out to sagebrush ridges that border the area.

Mule deer summer throughout the area and Table Mountain seems to be preferred for deer summer range. Moose use Anderson Meadows and Upper Pattengail year long. Mountain goats use the high country between Sand Lake and Odell Mountain year long.

Franklin grouse and blue grouse are found at higher elevations. Eastern brook trout populate all streams, and yellowstone cutthroat trout have been observed in Odell Creek. All lakes, except Elbow Lake, support fish. Odell Lake, most of the Bobcat Lakes, and Schweingar Lake have been studied extensively and research indicates that native populations of the rare southern grayling inhabit these lakes. <sup>40/</sup> The remainder of the lakes have been planted to rainbow trout. Cutthroat have hybridized with rainbow trout in the Lake of the Woods.

Threatened and Endangered Species

No endangered or threatened animal or plant species are known to occur.

Habitat Improvement

Wildlife habitat improvement opportunities would include opening up many dense timber stands to provide more openings and edge-effect. The general area where this could occur amounts to about 24,359 acres.

Refer to the Wildlife Resource map for the location of key ranges and areas suitable for habitat improvement.

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<sup>40/</sup> Eriksen, C. H., Physiological Ecology and Management of the Rare "Southern" Grayling, Thymallus Arcticus Tricolor Cope. The Claremont Colleges, Claremont, Calif., 1974.

Community Stability 41/

ALL STUDY AREAS

ISSUE

What consideration should be given to maintaining current employment levels for dependent communities?

SITUATION

Employment and income impacts of all wilderness and all nonwilderness designations for each study area were estimated from secondary data input-output models. The models provide estimates of economic impact resulting from changes in resource outputs. The basic unit of analysis is a multicounty economic impact area developed from resource flow data.

The Mount Henry study area is a part of the multicounty area that includes Flathead, Lake, and Lincoln counties in Montana. The Taylor-Hilgard and West Pioneer areas are in a multicounty area that includes Beaverhead, Gallatin, Madison, and Park counties in Montana. Impacts are estimated to occur within the multicounty area. An important assumption in the development of the model is that there will be no change in the structure of the area's economy.

A brief overview of the economy of the two multicounty areas follows:

Flathead, Lake, and Lincoln Counties

Projected 1980 population for the area is 84,800 and represents a 17.8 percent increase since 1970. Total labor force in January 1980, was estimated to be 38,066 with an unemployment rate of 11 percent - far in excess of the State-wide average of 7.6 percent.

Major economic sectors and their respective percentages of total employment (1975) are:

- Trade - 16.6 percent
- Manufacturing - 19.5 percent
- Services - 11.6 percent
- State and local Government - 12.9 percent
- Federal Government - 4.8 percent

Total wage and salary income for the area was \$223,764,000 in 1976. The wood products industry is the most important segment of the manufacturing sector. In 1976, wood products employment totaled 3,610 out of 5,580 jobs in manufacturing.

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<sup>41/</sup> Forest Service, Montana Wilderness Study Act Economic Analysis. USDA-Forest Service, Northern Region, 1980.



Beaverhead, Gallatin, Madison, and Park Counties

Projected 1980 population of the area is 66,900 and represents a 17.6 percent increase since 1970. The total labor force was estimated to be 29,717 in January 1980, with an unemployment rate of 7.1 percent.

Major economic sectors and their respective percentages of total employment are:

Trade - 18.0 percent  
 Agriculture - 20.7 percent  
 Services - 15.0 percent  
 State and local Government - 21.1 percent  
 Federal Government - 3.0 percent

Total wage and salary income for the area was \$178,839,000 in 1976. The wood products industry is less important in this area than in the north-western Montana area. The Beaverhead, Gallatin, Madison, and Park multi-county area had 600 employees in the wood products industry in 1976.

Table 2 shows the employment in person years and income in thousands of dollars for both maximum wilderness and nonwilderness designation. The employment and income shown is the total generated for each designation. Impacts include direct, indirect, and induced effects so the effect of responding income by households is explicitly considered.

Table 2. Employment and Income Levels for Wilderness and Nonwilderness Designation

	Mount Henry		Taylor-Hilgard		West Pioneer	
	Employment	Income	Employment	Income	Employment	Income
	(Person	(\$)	(Person	(\$)	(Person	(\$)
	Years)		Years)		Years)	
Maximum						
Wilderness	5.7	66,982	49.6	464,553	5.2	54,774
Maximum						
Nonwilderness	25.3	303,995	132.3	1,402,863	54.7	611,045

Significant changes would be in employment and income leading to a large (50 percent) variation (growth and decline) from the historical rate of change in population. Changes of this magnitude are not projected for either multicounty impact area. The difference between wilderness and nonwilderness designation for the Mount Henry area is 19.6 person years of employment and \$237,013 of income. This is less than one-tenth of one percent of total employment in the multicounty impact area.

Total change in employment between wilderness and nonwilderness for the Taylor-Hilgard area and West Pioneer area is 135.8 person years of employment in the impact area. This is one-half of one percent of total employment in the multicounty area. The difference in income for the southwest Montana multicounty area is \$1,537,708.

This change does represent a significant impact in the wood products industry since about 17 percent of the current employment in that industry is involved. This would be a locally significant impact.

Opportunities for Physically Handicapped and Elderly Persons 42/  
ALL STUDY AREAS

ISSUE

How much need is there for the study lands to contribute to recreation opportunities for physically handicapped and elderly persons?

SITUATION

The Region's National Forests are making every effort to insure that all developed sites are located, planned, developed, and maintained for accessibility to handicapped and elderly persons.

A Northern Region objective is to have all recreation sites and facilities accessible and usable as much as possible by the physically handicapped and elderly. New construction and rehabilitation of existing sites and facilities will accomplish this objective, with the exception of sites on steep land.

Although the emphasis is to provide opportunities for the handicapped and elderly in the mainstream of National Forest recreation, the search continues for special developments, such as the Palisade Falls Braille Trail on the Gallatin National Forest.

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42/ Forest Service Manual 2331.11e: Design for Use by the Physically Handicapped and Northern Region Supplement 63. USDA-Forest Service, 1979.

Resources Planning Act 43/  
ALL STUDY AREAS

ISSUE

What resources do the areas contain and how should the study area's resource outputs be allocated toward meeting the Resources Planning Act (RPA) program goals?

SITUATION

A consideration in the development of the alternatives in this environmental impact statement will be the ability of the study lands to help meet the 1980 RPA program goals projected to the year 1985 for the Northern Region and the study Forests. Each goal is shown as a high and low bounds. These goals can be directly compared with potential outputs for the MMSA, contiguous roadless areas, and additional RARE II "Further Planning" areas. The five outputs are wilderness, timber sale offerings, developed recreation use, dispersed recreation use (includes wildlife and fishing recreation use) and grazing, as shown in the accompanying table. Only the wilderness goal has not been assigned to the Forests; therefore, the Regional goal is shown in this resource.

If the 1985 wilderness goal for the Region were to be met, it would require all of the 1,217,900 acres of study lands in the Region be allocated to wilderness. The range of alternatives displayed in this statement will be responsive to both the wilderness and nonwilderness goals.

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43/ Forest Service Tentative 1980 RPA Program. USDA-Forest Service, Northern Region, 1980; and Forest Service, Regional Plan. USDA-Forest Service, Northern Region, 1980.

Table 3. RPA Goals, Outputs, and Measurements

		Wilderness	Timber Sale	Developed	Dispersed	Grazing	
		(M Acres)*	(MMBF)*	(M RVD)*	(M RVD)*	(AUM)*	
<u>R-1 RPA Goals (Projected to 1985)</u>		H**	7,100	1,224	3,900	7,500	1,434,000
		L**	5,600	1,000	2,400	5,300	1,390,000
<u>RPA Goals by Forest</u>							
Beaverhead NF		H-L	---***	25-20	217-134	284-201	194,450- 188,480
Gallatin NF		H-L	---***	13-11	752-463	1,199-847	43,680- 42,340
Kootenai NF		H-L	---***	225-184	114-70	384-271	12,580- 12,190
<u>Existing and Endorsed Wilderness</u>			5,846	-	-	-	-
<u>Additional Acres Needed to Meet</u>							
<u>Wilderness Goal</u>		H	1,254	-	-	-	-
		L	0	-	-	-	-
<u>Potential Outputs</u>							
MWSA Study Areas and Contiguous							
RARE II Lands			988.4	27.4	85.2	450.8	24,573
West Pioneer (BVHD)			(148.0)	(2.7)	( 0.0)	( 36.4)	(5,117)
Taylor-Hilgard (BVHD)			(120.2)	(2.2)	( 0.0)	( 32.1)	(2,519)
Taylor-Hilgard (GAL)			(205.6)	(4.3)	(43.2)	(115.2)	(9,460)
Mount Henry (KOOT)			( 23.4)	(2.0)	( 0.0)	( 1.4)	( 0)
<u>Additional RARE II "Further Planning"</u>			229.5	9.6	1.8	63.8	2,031

\*/ M = 1,000, MMBF = Million Board Feet, RVD = Recreation Visitor Day, AUM = Animal Unit Month

\*\*/ H = High Bounds, L = Low Bounds.

\*\*\*/ No wilderness goals assigned to Forests.



Wilderness Diversity 44/

ALL STUDY AREAS

ISSUE

What consideration should be given to a diversified National Wilderness Preservation System when proposing lands for wilderness?

SITUATION

Characteristics were identified in the RARE II process that would insure the diversity of areas to be added to the National Wilderness Preservation System (NWPS). Suggested goals and targets to maintain diversity of ecosystems and wilderness-associated wildlife were identified for National Forest lands in Montana. The RARE II targets were based on the characteristics of existing and probable NWPS areas. Therefore target assignments considered those gaps in representation of ecosystems and wildlife that National Forest roadless areas seemed best suited to fill.

Targets established to provide new or additional representations of the characteristics were applied to all RARE II areas throughout the Region. Many RARE II areas contained the same target. One example is the lynx, which is present in eight of the nine study areas, yet only three representatives were needed at the high target level. None were selected from Montana Wilderness Study Act areas because other areas met multiple targets, provided a better or larger representation, or reflected a better geographical distribution within the State and Region.

In the RARE II Draft Environmental Statement Alternative G, which was the high level of target achievement, five MWSA areas were selected to meet specific wilderness diversity targets. The following were among those five MWSA areas selected:

<u>MWSA Area</u>	<u>Target</u>
West Pioneer, 01-006	Grayling
Taylor-Hilgard, 01-549	Grizzly Bear
	Mountain Goat

As part of the RARE II Final Environmental Impact Statement analysis, the low level of achievement for ecosystems and wilderness-associated wildlife species were used to determine appropriate wilderness candidates. None of the above areas were selected for wildlife or ecosystem representation.

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44/ Forest Service, RARE II Draft Environmental Statement and Montana Supplement, 1978, and Forest Service, RARE II Final Environment Statement, 1979.

Wilderness Quality 45/

ALL STUDY AREAS

ISSUE

What consideration should be given to wilderness quality in determining which lands are proposed for wilderness?

SITUATION

Consideration of the quality of the National Wilderness Preservation System (NWPS) was a major factor in the RARE II process. A basic principle underlying the formulation and analysis of alternatives in this study is to insure the presence of qualities furthering the purposes of the Wilderness Act when selecting areas for wilderness. The RARE II process was based on characteristics the NWPS should contain and insured their consideration when selecting eligible areas.

To utilize components of the Wilderness Act as evaluation criteria a system was developed in RARE II that assigned a numerical rating for each of the attributes mentioned below. It is called the Wilderness Attribute Rating System (WARS). The factors rated were combined to give a potential WARS range of 4 to 28, from the lowest to the highest measure of quality.

The Wilderness Attribute Rating System consists of these components: natural integrity, apparent naturalness, solitude, and primitive recreation. Natural integrity is defined as the extent to which long-term ecological processes are intact and operating. Apparent naturalness is whether the roadless area appears natural to most people; solitude is defined as being isolated from the sights, sounds, and presence of others and from the development and evidence of man. Primitive recreation is that which provides opportunities for isolation from the evidence of man, a vastness of scale, feeling a part of the natural environment, having a high degree of challenge and risk, and using outdoor skills. It is characterized by meeting nature on its own terms, without comfort and convenience facilities. Each of the wilderness attribute components are rated from "1 to 7" with "1" providing no opportunities and "7" providing extreme or outstanding opportunities for wilderness experience.

Presence of ecological, geological, or other features of scientific, educational, scenic, or historical value are a part of this analysis.

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<sup>45/</sup> Forest Service, RARE II Wilderness Attribute Rating System--A User's Manual, 1977.

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<u>Area #</u>	<u>WARS Rating</u>	<u>Natural Integrity</u>	<u>Apparent Naturalness</u>	<u>Solitude</u>	<u>Primitive Recreation</u>
<u>Taylor-Hilgard</u>					
J1-549	19	6	5	4	4
N1-549	23	6	5	6	6
S1-549	26	7	7	6	6
E1-549	25	7	6	6	6
R1-549	21	6	5	5	5
<u>West Pioneer</u>					
01-006	26	7	6	7	6
<u>Mount Henry</u>					
01-666	19	5	5	4	5

SOCIOECONOMIC ENVIRONMENT

The Social Situation

MONTANA

ISSUE

What is the social structure of the communities and counties adjacent to the study area, and what potential effects should be considered?

SITUATION

As shown in table 4, Montana's population was 694,000 in 1970. This is less than one-half of 1 percent of the United States' total population. By 1976 the population was 755,000, an increase of 8.4 percent, while the national growth rate was 4.4 percent. The more rapid growth in the western mountainous region of Montana is largely attributed to the area's scenic attraction and rural character, and the national urban to rural population shift that has been happening since 1970.

Residents of small communities in western and southwestern Montana are generally engaged in logging, farming, ranching, recreation, and mineral and related work activities. Most people in the Butte-Anaconda area are associated with mining and metals processing. The business, medical, and educational service center for the western part of the state is Missoula. Missoula is the state's third largest city and home of the University of Montana.

East of the Continental Divide farming and ranching prevail in the plains and foothills. Grain farming dominates the northern part of the state, while livestock ranching is dominant in southern Montana. East of Billings coal development is underway and expected to have a major impact.

Within Montana are seven Indian reservations. These are the Flathead Reservation in western Montana; the Blackfeet Reservation just east of Glacier Park; the Rocky Boy, Fort Belknap, and Fort Peck Reservations located in northern Montana between the Missouri River and the Canadian line; and the Crow and Northern Cheyenne Reservations south and east of Billings in southwestern Montana.

Montana's natural beauty, abundant recreational opportunities, and general lack of crowding attract new residents and thousands of vacationers each year. Montana is rich in natural resources. In addition to millions of acres of range and cropland, other prominent resources are water, copper, timber, coal, lead, oil, and natural gas.

Land use has become increasingly important to Montanans with increases in the state's population and national demands for natural resources. Striking a stable balance among providing goods and services to the state and nation, maintaining and strengthening the state's economy, retaining the scenic beauty and undeveloped nature of the land has become a major concern with many residents.

To some people the balance is reached by designating more areas as wilderness with no developed use, in combination with National Forest System lands already allocated for developed uses. For others the economy has always been somewhat uncertain and unstable, and a broader land base dedicated to resource development would provide commodities more efficiently. Still others want no change, but would use the areas as they have traditionally been used.

There is widespread public concern for the future of the Montana Wilderness Study Act areas. The areas have a history of public use, and the public wants a voice in the land use decisions being made for the areas.



The Social Situation

MOUNT HENRY

The Mount Henry area is located in Lincoln County 35 miles north of Libby and Troy near the East Fork Yaak River.

Unlike other counties in western Montana, Lincoln County's population is declining. When construction of a dam on the Kootenai River began in 1966, many people moved to the area. Since completion of the dam in 1973, the unemployment rate has risen to about 15 percent. From 1970 to 1976 the population has decreased 9.2 percent.

Many of the people who worked on the dam established homes and want to stay. Like the rest of western Montana, Lincoln County offers undeveloped, uncrowded, peaceful beauty with the attraction of "getting-away-from-it-all." Some people are concerned about the consequences of development, but there is also a need for more employment sources and a more stable economy. The timber industry is one of the major sources of long-term employment. In recent years the opportunity for mineral development has offered another major source of employment.

Mount Henry gained recognition with an administrative appeal and court challenge of two planned timber sales in 1974. The area is largely an attraction because of its lakes. Fishing, big game hunting, and cross-country skiing are the most popular activities. Some residents in the Yaak River Valley would like to see the area protected from further development.

### The Social Situation

#### TAYLOR-HILGARD

Located in Madison and Gallatin Counties, the Taylor-Hilgard area in the Madison Range runs north and south between the Madison and Gallatin Rivers. The area has long been a focal point of discussion between interest groups because of its wilderness qualities. There is also concern for the conservation of its wildlife, especially the elk migration routes from Yellowstone Park to winter range in the Gallatin and Madison valleys. Big game hunting is significant throughout the area. Outfitter-guide operations are headquartered in the Gallatin and Madison valleys.

This area has been managed as roadless since the early 1960's when the Forest Service reached an agreement with a group of local conservationists and dude ranchers and designated the Taylor-Hilgard "hold" area. That area was not as large as the present wilderness study area nor did it contain the intermingled privately owned lands. Because of this previous agreement and subsequent use of the area, the Taylor-Hilgard has attained a degree of local and regional significance as an excellent "backcountry" or "wilderness-type" recreation area.

A strong recreation industry, including outfitters, guides, and dude ranches, has been supported by the availability of the Taylor-Hilgard area. Along with state and national environmental groups, this group is lobbying for wilderness designation.

Burlington Northern has much intermingled land which has provided some timber to local Gallatin County sawmills. They have announced plans to harvest timber from their lands in the Taylor-Hilgard area. The objectives of wilderness management on National Forest land may conflict with Burlington Northern's objectives for managing lands encompassed within the study area. There would be some impact on the local timber industry.

Snowmobiling is an important recreation activity. Snowmobilers are well-organized and have made their desires known on the Gallatin National Forest. The greatest use occurs in Carrot and Sage Basins, and the Cabin Creek area. To include these areas, and part of the Big Sky Trail, in wilderness would decrease the area available for snowmobilers' use.

The proposed access route for roads and a powerline via Jack Creek, which would bisect the Madison Range, is a major issue. The area is valued for its undeveloped nature; however, some interest groups would like an access route. One such interest group is the Burlington Northern Railroad who want access to their land. Another interest is the Big Sky ski area in the Gallatin Canyon. As taxpayers and residents of Madison County they would like access to the valley for schools, other public services, and possible employment sources. Some Madison valley residents would like

more direct access to the Big Sky area. Another concern is the proposed Clyde Park-Ennis-Big Sky powerline which would supply Ennis and the Big Sky resort area with a more stable source of power than what they have now.

The Forest Service recently studied the feasibility of the exchange of 177,000 acres of Burlington Northern land in the northern part of the Taylor-Hilgard area for other National Forest land. Environmental groups hoped the consolidation of National Forest land would allow better options for wilderness in the area. The Secretary of Agriculture directed the Forest Service to abandon preparation of the environmental impact statement for the large land exchange in March 1979.

#### Communities and Counties Involved

The two counties directly affected by the Taylor-Hilgard study area are Gallatin and Madison Counties. The towns and communities most affected are Ennis, West Yellowstone, Big Sky, and Bozeman. A short discussion of the social structure and social setting of each town or community follows:

Ennis. Ennis is the center of a large and stable ranching community in the Madison valley. It has a population of 550 people. General business and trade are largely oriented toward ranching and agriculture. There is no industry. The timber that is logged goes to Dillon or Idaho for milling. Ennis is also oriented to the tourist trade with a large number of summer travelers passing through going to Yellowstone Park. There are a few dude ranches and the area draws a large number of fishermen to the Madison River and hunters in the fall. Many people earn at least part of their livelihood as hunting and fishing guides.

Like many rural Montana communities, this area is experiencing an influx of residents as local ranches are being subdivided.

West Yellowstone. The main orientation of West Yellowstone is the tourist industry. The existence of the town, and most of its 800 residents, depends upon tourism. Until about 5 years ago, a sawmill operated and employed 30 men, but that has closed. The residents have generally shown support for any kind of recreation development. They have increased winter business tremendously by promoting snowmobiling and more recently cross-country skiing in the area. They heavily favor the development of Ski Yellowstone. Nonrecreation development is viewed differently. There was loud opposition to geothermal leasing and possible development on the Targhee National Forest to the south. Possible oil and gas leasing in the Hebgen Lake area has been viewed with mixed feelings up to this point.

Big Sky. The majority of this community are relative newcomers; the remainder are long-time Gallatin Canyon residents. The newcomers are there because of the setting and the recreational opportunities, and many

are not dependent on the local economy for their livelihood. The old-time residents consist of dude ranchers, motel and resort owners whose way of life depends on people who are looking for a recreation experience. Both new and old residents have a stake in keeping the surrounding area like it is.

Bozeman. Bozeman is growing fast. People seem to be attracted to the area because of its scenic beauty and natural setting, rather than job opportunities. The 1980 population is estimated as 35,400. One measure of the rate of growth is the 44 percent increase within the city limits of Bozeman over the 1970-1980 decade. This growth rate has meant an increase of 8,400 people in the city during the past 10 years.

The general populace of Bozeman and the surrounding area uses the National Forests primarily for recreation. Only a few residents are directly dependent on the Forests for their livelihood; 2.5 percent of the work force is employed in the wood products industry. This woods and sawmill employment is directly related to the Yellowstone Pine mill in Belgrade. In the past, this company has obtained much of its timber from private lands. In the future, it will probably have to rely more on National Forest timber to maintain sawmill capacity.

Because of the complex social structure and rapid influx of new residents, it is difficult to accurately predict the views of the many newcomers about land management. But, past experience indicates that the trend will be toward placing greater value on amenities than commodities. As Bozeman's reputation for being a summer, fall, and winter recreation center and an amicable place to live becomes more widespread, the residents will most likely put more pressure--make more demands--on the National Forest for recreation related activities.

Montana State University serves as an educational center for 10,000 students, so the university community is large enough to be a significant and permanent part of Bozeman. So far, they have not been very involved in land management decisions. On the other hand, other groups have become involved, and some are taking strong antidevelopment positions.

These local groups have joined efforts with the Montana Wilderness Association and other state and national organizations interested in slowing development. One group has formed locally for the express purpose of working toward wilderness designation for the two MWSA areas on the Gallatin National Forest.

The snowmobile clubs and four-wheel-drive groups are also very well-organized in the Bozeman area. These groups were well represented at the MWSA public workshops in Bozeman and Livingston. They expressed their concerns about wilderness designation in places where they now snowmobile or use their four-wheel drive vehicles.

Consideration of Potential Social Effects

Depending on the management options, it is apparent that several areas of potential social effects will have to be examined. These are:

1. Restrictions on the use of motorized vehicles;
2. Effects on access to the National Forest;
3. Demand for dispersed recreation;
4. Potential for population increase near the Taylor-Hilgard area;
5. Timber supply potential in relation to wood products industry employment;
6. Effects on grazing and dependent ranchers;
7. Effects on the family ranch way of life;
8. Effects of subdivisions and housing development close to or adjacent to the National Forest;
9. Effects of changing the combination of present National Forest land uses;
10. Effects of oil, gas, and mineral potential on classification and subsequent use of the Taylor-Hilgard area; and
11. Effects of proposed action on oil, gas, and mineral exploration and potential development.

These and other potential social effects need to be examined to help maintain those that are most desirable and mitigate adverse social impacts.



The Social Situation

WEST PIONEER

The West Pioneer area lies east of the Big Hole Valley and Big Hole River in Beaverhead County. The private land surrounding the Beaverhead National Forest is generally devoted to ranching. Small communities such as Jackson, Wisdom, and Wise River are nearby. Butte and Anaconda are about 50 miles northeast of the area, and Dillon is 30 road miles east of the its southern end. Beaverhead County has experienced near zero population growth from 1970 to 1976.

The West Pioneer area is used heavily during hunting season. Snowmobiling is popular because of the gentle terrain, numerous meadows, and generally good snow conditions. Two favorite snowmobile routes are from Wisdom to Maverick Ski Area and Maverick to Jackson. There is also heavy motorbike use during the summer.

Generally local people are against full development of the area, but in favor of maintaining motorized recreation opportunities. Others, mainly wood products employees, are concerned that additional wilderness classification in the county could force closure of the Dillon sawmill.



Economic Analysis 46/

ALL STUDY AREAS

ISSUE

How important is economic efficiency and other economic impacts in determining the level and location of resource development in the study areas?

SITUATION

The measure of economic efficiency is present net worth. The alternative with the highest present net worth represents the most efficient allocation of resources. Present net worth of an alternative is determined by examining the costs and benefits of timber, recreation, and mineral production. Each alternative represents a different combination of costs and benefits.

Timber:

Method of Analysis. The basic unit of analysis for timber resources in each study area is the Economic Analysis Unit (EAU). An EAU is defined as an area served by a road network with a single point of entry into the study area. National Forest personnel developed the road networks on the basis of existing plans and knowledge of the study areas. Each EAU (and road network) is independent of every other EAU in a study area. Road networks are mapped sequentially in segments from the single point of origin to the various terminal points.

Economic Analysis Units are in turn subdivided into timber stands attached to the road segments. Data on each stand including photo interpretation type, habitat type, harvest method, date of harvest, and probable logging method enabled estimation of costs and value on a site specific basis.

The calculation of present net worth for the timber resource is determined by both land expectation value, i.e., the bare land value of an infinite series of timber rotations, and the value of the existing stand at harvest date.

In sequence, the calculation of present net worth is as follows:

1. The value of existing timber stands at the scheduled dates of harvest and the land expectation value of associated sites are determined.
2. The existing stand and land expectation values are discounted to the present then summed. This sum is the present value of the stand plus site.

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<sup>46/</sup> Forest Service, Montana Wilderness Study Act Economic Analysis. USDA-Forest Service, Northern Region, 1980.

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3. The present value of the stand plus site is summed for all stands attached to each road segment.

4. Road construction, reconstruction, and maintenance costs are discounted to the present and subtracted from the summed timber values. This produces a present net worth for the land and timber associated with each road segment.

5. The present net worths associated with the road segments are summed from the terminal points toward the origin. In this process, areas that cannot be accessed without incurring an economic loss are identified.

The result is that no road segment terminates in an area of negative present net worth. Also, road segments with a negative present net worth may be built if access is provided to sufficient positively valued timber beyond the negative segment. When complete, the only portion of an EAU that will be managed is the area that generates a positive present net worth.

Valuation Methodology. Stumpage value equations, which predict the market price of timber using stand, site, and market variables, were developed for this study. These equations are based upon historical timber sale data collected from the respective Forests.

The timber value must be adjusted to reflect future changes in the real value of stumpage. The softwood timber market assessment model used in the 1980 Resources Planning Act Assessment provided the basic projection data for making this adjustment.

Cost Methodology. Regression equations were developed to predict planting costs for all three study areas as a function of specific site characteristics. Other management costs including site preparation, pre-commercial thinning, and annual management costs are averages derived from National Forest data.

Road Costs. Road construction costs were developed by National Forest engineering personnel with direction from the Regional Office. All cost estimates were based on a minimum standard road and include the costs of meeting environmental constraints. Road reconstruction and maintenance costs were also calculated.

Yield Information. Forest inventory data specific to each study area was used to determine existing net per acre volumes by habitat type and photo interpretation class. The growth prognosis model (Stage) was then used to predict volumes, median d.b.h. (diameter at breast height), and species mix at the planned time of harvest.

Regenerated stand yield tables are required to provide the volumes used in the calculation of land expectation value. Regional Office Timber Management staff worked with National Forest timber planners to develop these tables based on growth prognosis models.

Forest Regulation. Since each study area is but a portion on an entire National Forest, nondeclining even-flow was not used to constrain the harvest schedule for each EAU. The even-flow constraint applies to the entire Forest, and the harvest from the study area would be a portion of the annual allowable harvest for the Forest. On the study areas, the cut in the first decade is usually in excess of the mean annual increment because the study areas have large concentrations of old-growth timber.

This analysis permits the calculation of annual employment and income impacts. The impact of the study area on the potential yield calculations for the entire Forest can also be determined.

Area Summary. The analysis was done using real discount rates of 4, 7-1/8, and 10 percent. The results obtained, when applying a 4 percent discount rate, are as follows:

Within the Mount Henry study area 14,206 acres of commercial forest in six EAU's were analyzed. All areas were positively valued with a total present net worth of \$24,170,765. This corresponds to an average value of \$1,701 per acre.

Total timber values in the Taylor-Hilgard study area were estimated to be \$58,846,273. This present value is based on the planned harvest of 68,527 acres of commercial forest contained in 25 EAU's. One EAU, containing 304 commercial acres, was negatively valued. The average per acre value, excluding this negative EAU, is \$859.

Present timber values for the West Pioneer study area, based on 43,276 acres in 10 EAU's, are \$17,842,010. The average per acre value is \$412. One EAU, containing 545 commercial acres, was negatively valued.

The positively valued acreage declines slightly when 7-1/8 and 10 percent discount rates are applied. The results for all three discount rates are summarized in table 5. A detailed description of the results is contained in a technical report, the "Montana Wilderness Study Act Economic Analysis."



Table 5. Timber Economic Analysis Summary

<u>Study area</u>	<u>Acres + PNW</u>	<u>Acres - PNW</u>	<u>Total PNW</u>	<u>Value/* acre</u>
-----4 percent discount rate-----				
Mount Henry	14,206	0	\$24,170,765	\$1,701
Taylor-Hilgard	68,527	304	58,846,273	859
West Pioneer	43,276	545	17,842,010	412
-----7-1/8 percent discount rate-----				
Mount Henry	14,206	0	\$12,589,131	\$886
Taylor-Hilgard	66,714	2,117	22,912,047	343
West Pioneer	43,276	545	8,490,743	196
-----10 percent discount rate-----				
Mount Henry	14,206	0	\$8,436,672	\$594
Taylor-Hilgard	66,277	2,554	11,673,342	176
West Pioneer	42,750	1,071	3,541,788	83

\*Negatively valued areas were not included when calculating total PNW (present net worth) and value/acre.

#### Recreation:

The basic unit of recreation is the Recreation Visitor Day (RVD). Fishing and hunting are included in the dispersed nonmotorized estimates. Current estimates of recreation for the three study areas are shown in table 6.

Table 6. Estimated 1979 RVD's by Study Area

	<u>TOTAL</u>		
	<u>Mount Henry</u>	<u>Taylor-Hilgard</u>	<u>West Pioneer</u>
Developed	0	2,000	0
Dispersed Motorized	100	8,700	700
Dispersed Nonmotorized	1,100	63,000	2,900
	<u>PER ACRE</u>		
Dispersed Motorized	.004	.027	.005
Dispersed Nonmotorized	.047	.195	.020

Forecasts of recreation use through 2025 were prepared for the Regional Plan. These forecasts were made for the subregional areas: northern Idaho, western Montana, central/eastern Montana, North Dakota, and South Dakota. Table 7 shows the percentage increase in RVD's for the latter two areas which contain the three study areas of concern here.

Table 7. Percentage Increase in RVD's from 1979 to 2025 <sup>47/</sup>

	<u>Western Montana</u>	<u>Central/Eastern Montana North Dakota/ South Dakota</u>
Developed	121	120
Dispersed	232	146
Wilderness	425	511

This analysis assumed that each Montana Wilderness Study area will experience the same growth rates in RVD's as the subregion in which it is located. It is assumed that wilderness designation would result in growth of dispersed nonmotorized recreation at the same rate as the forecast for wilderness recreation in the appropriate subregion. Developed and dispersed motorized RVD's are assumed to be lost. The Mount Henry study area is located in the western Montana subregion. West Pioneer and Taylor-Hilgard are located in the central/eastern Montana, North Dakota, South Dakota subregions.

Table 8 shows the per acre recreation use forecast for 2025 in each of the study areas. It is assumed that the year 2025 forecast values are the result of constant annual growth rates compounded over the 45-year interval. Constant use levels are assumed after 2025.

Table 8. Forecast RVD's Per Acre for Year 2025

	<u>Nonwilderness Alternative</u>		
	<u>Mount Henry</u>	<u>Taylor-Hilgard</u>	<u>West Pioneer</u>
Dispersed Motorized	.013	.067	.012
Dispersed Nonmotorized	.156	.480	.049
	<u>Wilderness Alternative</u>		
Dispersed Nonmotorized	.247	1.192	.122

<sup>47/</sup> Forest Service, Regional Plan. USDA-Forest Service, Northern Region, 1980.

## 98 Economic/All Study Areas

Spanish Creek campground is the only developed site in the Taylor-Hilgard area. Estimated 1979 use is 2,000 RVD's. Projected 2025 use is 2.1995 times the 1979 use and is 4,399 RVD's. Annual rate of increase in use is expected to be 1.757, based on the average for central and eastern Montana from the Regional Plan analysis. The Gallatin National Forest estimated current use of the site is 30 percent of capacity.

	<u>Dollar Value per RVD's</u>		
	<u>Mount Henry</u>	<u>Taylor-Hilgard</u>	<u>West Pioneer</u>
Developed	3.00	3.00	3.00
Dispersed Motorized	3.00	3.00	3.00
Dispersed Nonmotorized	14.38	10.38	13.82

Cost estimates for recreation activities are based on Forest-wide averages for the various types of recreation. Costs include most activities necessary for operating and managing the recreation activity. Developed site construction is excluded. Fish and wildlife expenditures are included in the averages for dispersed nonmotorized recreation. Costs are expressed in 1980 dollars per RVD's. No increases in real costs are assumed over the analysis period.

	<u>Cost per RVD's (Forest Average)</u>		
	<u>Mount Henry</u>	<u>Taylor-Hilgard</u>	<u>West Pioneer</u>
Developed	.53	.55	.34
Dispersed	.29	.04	.28
Wilderness	.28	.19	.29

The Taylor-Hilgard area is the only study area where recreation constitutes a significant portion of the present net worth - \$32,692,477 for wilderness designation. By comparison, the indicated present net worth of nonwilderness designation is \$21,996,148.

### Minerals:

Mineral resources are valued on the basis of in-place value of deposits expected to be developed. The \$36,930,000 present net worth is the potential value of molybdenum, gold and silver in the West Pioneer study area. Mineral values for the other two areas are relatively insignificant. The West Pioneer Minerals Issue section contains a detailed summary of the analytical methodology.

Wildlife:

Changes in wildlife related recreation were not included. Reduction in quality of big game habitat, as a result of roads offset by the increases in forage from logging can be mitigated by good road management. Net changes cannot be calculated without specific plans.

Range:

Changes in range resource costs and benefits are not significant relative to total costs and benefits on any of the study areas.

It must be noted that not all resource values and costs can be included in the efficiency analysis. Nonvalued resources can only be reflected in terms of physical changes.

# EVALUATION CRITERIA

## Purpose:

In formulating this environmental impact statement, the Forest Service developed criteria for identifying alternatives, evaluating them, and selecting a preferred alternative. The evaluation criteria were based on:

- Laws, executive orders, regulations, and policy.
- Regional goals and objectives.
- Public issues and management concerns.
- Environmental, economic, and social feasibilities.
- Present and anticipated management situation.

Many of these criteria are firmly established, particularly those based on law. Some are flexible and may change as additional public comment is received.

Specific issues which relate to the criteria were described in the preceding AFFECTED ENVIRONMENT section.

The evaluation criteria developed for this study are:

## Criteria applying to all alternatives:

All alternatives will comply with existing laws and regulations.

## Criteria to be used in selecting the preferred alternative:

1. Provide for quality additions to the National Wilderness Preservation System through consideration of:

-- Geographical distribution (weekend visitation opportunities from population centers) in relation to presently classified areas or areas under study for wilderness.

-- Diversity of ecosystem representation and wilderness-associated wildlife species.

-- Wilderness suitability.

-- Wilderness quality as determined by the Wilderness Attribute Rating System (WARS).

2. Provide opportunities for nonwilderness commodity output potential through consideration of:

-- Diverse recreation opportunities in combination with visitor day potentials.



## 101 Evaluation Criteria

- Opportunities for management of essential and key wildlife habitat.
  - Opportunities for off-road motorized recreation.
  - Water supply.
  - Sustained timber production under present technology.
  - Opportunity for exploration and development of mineral resources where the potential is significant.
  - Sustained potential level of firewood production.
  - Opportunities for other energy needs, such as energy transmission corridors.
  - Sustained grazing capacity potential.
  - Recreation opportunities for handicapped and elderly persons.
3. Provide opportunities for wilderness commodity output potential through consideration of:
- Diverse dispersed recreation opportunities in combination with visitor day potentials.
  - Sustained grazing capacity under wilderness management.
4. Provide for equitable consideration of private inholdings through consideration of:
- Management options available for private land exchange or management of inholdings.
  - Access opportunities to private land for commodity extraction and land uses, primarily recreation.
5. Provide for resource protection through:
- Minimizing the loss of resource values resulting from fire, insects, and disease.
  - Protecting soil productivity by minimizing soil loss.
6. Contribute towards meeting the Northern Region's Resource Planning Act program goals.
7. Maximize net benefits to society, subject to meeting the criteria for community stability and land use patterns.
8. Provide for resource uses and outputs levels that minimize rapid change in the existing economic structure of local communities and in land use patterns.

# ALTERNATIVES CONSIDERED

## GUIDELINES

In this section, the alternatives for management of National Forest and Bureau of Land Management lands within the study area are described. Five alternatives each are shown for Mount Henry and West Pioneer, and eight alternatives for Taylor-Hilgard. The alternatives for the areas are independent of one another.

The alternatives were developed using the guidelines for the design and formulation of alternatives established by the interdisciplinary team. The guidelines are:

1. Alternatives will be designed to explore a reasonable range of management options. Each alternative must be feasible in terms of social, economic, physical, biological, and legal constraints.
2. The nonwilderness alternatives or nonwilderness portions of alternatives will be consistent with the management as contained in completed land management plans, or Part I of the Multiple Use Plans, or a combination of these.
3. Information obtained from the public workshops, the social assessment, and the analysis of the management issues will help determine a reasonable range of alternatives.
4. Alternatives chosen for evaluation will be presented in the draft and final environmental statements. The reasons why the nonchosen alternatives were not selected for evaluation will be documented.
5. Each identified major public issue and management concern will be addressed in one or more alternatives.
6. The number of alternatives presented to the public for each area will be that needed to adequately address public issues and management concerns, and be responsive to information obtained during public involvement activities.
7. One alternative must reflect continuation of management under existing direction. This alternative will represent the "no action" alternative requirement (Forest Service Manual 1920.85a). The "no action" alternative will reflect the current output levels.

The current management direction is considered to be that contained in section 3(a) of the Montana Wilderness Study Act which states "...the wilderness study areas...shall, until Congress determines otherwise, be administered...so as to maintain their presently existing wilderness character and potential for inclusion in the National Wilderness Preservation System."

## 103 Alternatives

8. Each alternative must be described in sufficient detail to allow a comparison of the short- and long-term outputs and effects.

Another consideration in the development of alternatives is the location of boundaries between areas of differing management goals and objectives. These boundaries have been located to allow the efficient management of resources and permitted uses under each alternative.

Although nonwilderness management goals are described for various portions of the study areas in each of the alternatives, this should not be considered to represent final land management decisions. These management goals or intents are included to illustrate potential nonwilderness uses within each of the alternatives. Additional nonwilderness management decisions will be made through subsequent Forest Land and Resource Planning.

The management intent is described below for wilderness, no action, and nonwilderness and will apply to all appropriate alternatives. The mix of these strategies varies between alternatives and is depicted on the alternative maps and in the alternative descriptions.

### MANAGEMENT AREAS

#### Management Area No. 1 48/

##### MANAGEMENT INTENT (NO ACTION)

In accordance with the Montana Wilderness Study Act (Public Law 95-150), manage to maintain the presently existing wilderness character and potential for inclusion in the National Wilderness Preservation System. The no action or current management alternative entails continued recreation use including the use of off-road vehicles, and the continuation of livestock grazing as specified by Senate Report 95-163 and House of Representatives Report 95-620.

#### Management Area No. 2

##### MANAGEMENT INTENT (WILDERNESS)

Manage to preserve the natural character of these areas as defined in and directed by the Wilderness Act of 1964. Allow natural processes to operate to the extent possible; keep man's influence essentially unnoticeable. Keep the objective to provide an enduring wilderness resource foremost while providing for legitimate use and enjoyment of these areas.

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<sup>48/</sup> Some additional RARE II acreage, JI-549 and RI-549, and Bureau of Land Management acreage are included in this management area.

Management Area No. 3

MANAGEMENT INTENT (NONWILDERNESS)  
WEST PIONEER and TAYLOR-HILGARD

Manage in accordance with the Beaverhead Forest Land Management Plan, Hebgen Lake, and Spanish Peaks Unit Plans, or Part I of the Multiple Use Plan for the Beaverhead and Gallatin National Forests to provide a broad range of resource opportunities on suitable sites including timber management and associated road construction, wildlife habitat management, livestock grazing, and all forms of nonmotorized dispersed recreation and motorized forms of recreation.

Bureau of Land Management lands would be managed in accordance with the Dillon Resource Area Management Framework Plan.

Management Area No. 3

MANAGEMENT INTENT (NONWILDERNESS)  
MOUNT HENRY

Manage in accordance with the East Fork Yaak, South Fork Yaak, West Kootenai, and Big Fork Unit Plans to provide a broad range of resource opportunities on suitable sites including timber management and associated road construction, wildlife habitat management, and all forms of nonmotorized dispersed recreation and motorized forms of recreation.

# 105 Alternatives/Mount Henry

## ALTERNATIVES

### Alternative A

#### MOUNT HENRY

This alternative proposes the area be managed to maintain the presently existing wilderness character and potential for inclusion in the National Wilderness Preservation System. This is a "no action" alternative or no change from the present management as described by Management Area No. 1. This alternative is depicted on alternative map A.

	<u>Wilderness</u>	<u>Nonwilderness</u>	<u>No Action</u>
Gross Acres <u>49/</u>	0	0	23,450
Net Acres <u>50/</u>	0	0	23,450

### Alternative B

#### MOUNT HENRY

This alternative proposes designation of the entire study area as wilderness, with the exception of 2,930 acres of land that contain incompatible uses, principally maintained or constructed roads, and evidence of recent timber harvest activities. The area proposed as wilderness is identified as Management Area No. 2 and the area excluded is identified as Management Area No. 3 on alternative map B.

	<u>Wilderness</u>	<u>Nonwilderness</u>
Gross Acres	20,520	2,930
Net Acres	20,520	2,930

### Alternative C

#### MOUNT HENRY

This alternative proposes the entire study area be managed as nonwilderness for a broad range of resource uses as indicated by the description in Management Area No. 3 on alternative map C.

	<u>Wilderness</u>	<u>Nonwilderness</u>
Gross Acres	0	23,450
Net Acres	0	23,450

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49/ Gross Acreage includes all lands, both Federal and non-Federal, in the study area.

50/ Net acreage includes only Federal lands in the study area.



Alternative D  
MOUNT HENRY

This alternative proposes a somewhat smaller wilderness than alternative B. This alternative was formulated to retain the primary features and wilderness recreational attributes within the wilderness while placing the boundary on more definitive topographic features thus providing a more manageable boundary than alternative B.

The area proposed for wilderness is identified as Management Area No. 2, and the nonwilderness portion is shown as Management Area No. 3 on alternative map D.

	<u>Wilderness</u>	<u>Nonwilderness</u>
Gross Acres	15,590	7,860
Net Acres	15,590	7,860

Alternative E  
MOUNT HENRY

This alternative proposes a wilderness smaller than alternative D. The wilderness is a central core area that comprises about 50 percent of the total study area. A major consideration in the formulation of this alternative was to maintain the key wilderness attributes and features in a wilderness within a logical configuration while retaining in nonwilderness most of the timber management and motorized recreation potentials of the area.

The area proposed for wilderness is identified as Management Area No. 2 and that proposed for nonwilderness is identified as Management Area No. 3 on alternative map E.

	<u>Wilderness</u>	<u>Nonwilderness</u>
Gross Acres	11,550	11,900
Net Acres	11,550	11,900

Alternative A  
TAYLOR-HILGARD

This alternative proposes the area be managed to maintain the presently existing wilderness character and potential for inclusion in the National Wilderness Preservation System subject to existing private rights. The area contains about 62,000 acres of non-Federal land largely in a checkerboard pattern and owned principally by Burlington Northern, Inc. Burlington Northern is not interested in selling their lands but wishes to acquire good timber-growing lands on the Beaverhead and Gallatin National Forests or elsewhere in western Montana to consolidate their ownership. Access to the Burlington Northern lands will continue to be a problem if the present ownership pattern is maintained. Discussion of exchange possibilities must be general in nature until actual negotiations are begun with landowners regarding the values involved.

This is a "no action" alternative or no change from the present condition as described by Management Area No. 1. This alternative is depicted on alternative map A.

	<u>Wilderness</u>	<u>Nonwilderness</u>	<u>No Action</u>
Gross Acres <u>51/</u>	0	0	389,424
Net Acres <u>52/</u>	0	0	327,351

Alternative B  
TAYLOR-HILGARD

This alternative proposed designation of all the Federally owned land within the study area as wilderness except 7,528 acres which contain incompatible uses such as roads, recent timber harvest activities, or campgrounds. It also excludes 80 acres of National Forest land needed for development of end-of-road recreation access facilities in Bear Creek for the wilderness user.

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51/ Gross acreage includes all lands, both Federal and non-Federal, in the study area.

52/ Net acreage includes only Federal lands in the study area, and includes 1,509 acres of Bureau of Land Management lands.

The alternative is based on the assumption that the private lands, located principally in Cedar, Indian, Bear, Buck, and Jack Creeks would be acquired through purchase or exchange, or would remain in private ownership and be managed as wilderness. If the Burlington Northern lands were acquired by exchange, their priorities for consolidating their ownership appear to be for the acquisition of good timber-growing sites in western Montana. As mentioned under alternative A, the sale of their lands to the government is not acceptable to Burlington Northern under any alternative.

Possible general locations in which Burlington Northern may wish to consolidate their ownership in western Montana include: the 3-mile and 8-mile drainages in the Bitterroot National Forest; the Island Unit and the Swan River drainage on the Flathead National Forest; the Fisher River drainage and the McGregor Peak area on the Kootenai National Forest; and the Mill, Gold, Miller Creek, the Thompson River drainage, and the Muir Peak area on the Lolo National Forest; or other locations of checkerboard ownership.

In order to effect this alternative, the Forest Service may need condemnation authority to acquire the large acreage of private land within the proposed wilderness boundary.

In this alternative, five separate parcels totaling 1,509 acres of Bureau of Land Management lands lying along the west boundary of the study area are proposed for wilderness. The area proposed as wilderness is identified as Management Area No. 2 and the area excluded is identified as Management Area No. 3 on alternative map B.

	<u>Wilderness</u>	<u>Nonwilderness</u>
Gross Acres	377,059	12,365
Net Acres	319,823	7,528

#### Alternative C TAYLOR-HILGARD

This alternative proposes the entire study area be managed as nonwilderness for a broad range of resource uses as indicated by the description in Management Area No. 3 on alternative map C. The management and development of the National Forest lands would be coordinated with that of the intermingled private lands.

	<u>Wilderness</u>	<u>Nonwilderness</u>
Gross Acres	0	389,424
Net Acres	0	327,351

Alternative D  
TAYLOR-HILGARD

This alternative proposes designation as wilderness the portion of the area south of J1-549 (Jack Creek) except for that part of N1-549 lying in the Gallatin River drainage, all of E1-549, and the part of S1-549 which includes the Beaver, Wyethia, Cache, and Rose Creek drainages. It also excludes 80 acres of National Forest land for end-of-road facilities described in alternative B. About 7,243 acres are also being proposed as additions to the administration-endorsed Spanish Peaks Wilderness. The proposed additions lie in two locations: on the north-side of J1-549 (Jack Creek), and in R1-549 directly west of the Gallatin River. About 1,541 acres of National Forest land in J1-549 and R1-549 contiguous to the Bureau of Land Management's Bear Trap Canyon Primitive Area are being proposed as part of BLM's proposed wilderness. The Bear Trap portion includes Sections 3, 4, 9, 10, and 16, T4S, R1E, which approximates the major physiographic break in topography east of the Madison River.

Four separate parcels totaling 1,469 acres of Bureau of Land Management lands lying along the west boundary of the study area are proposed for wilderness. A fifth parcel, totaling 40 acres, lying adjacent to J1-549 is proposed as nonwilderness.

In this alternative, the area not proposed for wilderness would be available for timber management, motorized and nonmotorized recreation use, oil and gas exploration, and wildlife habitat management activities on suitable sites.

This alternative envisions a land adjustment plan that would acquire the Burlington Northern and other private lands in Cedar, Bear, and Indian Creeks in exchange for National Forest lands in J1-549 (Jack Creek) or in other locations. The area proposed for wilderness is identified as Management Area No. 2 and that proposed for nonwilderness is identified as Management Area No. 3 on alternative map D.

	<u>Wilderness</u>	<u>Nonwilderness</u>
Gross Acres	157,826	231,598
Net Acres	129,941	197,410

Alternative E

## TAYLOR-HILGARD

This alternative proposes designation as wilderness the Federal land in the southern core area (SI-549) that contains the highest wilderness quality within the study area as measured by WARS. Most of the high mountain lakes are located in this unit. Nearly all the land in SI-549 is Federally owned. As in alternative D, this alternative also proposes as wilderness, 7,243 acres of additions to the administration-endorsed Spanish Peaks Wilderness and about 1,541 acres in JI-549 and RI-549 as part of the Bureau of Land Management's proposed Bear Trap Canyon Wilderness and 1,469 acres of Bureau of Land Management lands lying along the west boundary of the study area. A fifth parcel totaling 40 acres, adjacent to JI-549 is proposed as nonwilderness. Timber management potentials can be realized and the popular Big Sky Snowmobile Trail and play areas are available for continued use. Opportunities for wildlife habitat improvement are provided.

The area proposed for wilderness is identified as Management Area No. 2 and that proposed for nonwilderness is identified as Management Area No. 3 on alternative map E.

	<u>Wilderness</u>	<u>Nonwilderness</u>
Gross Acres	83,244	306,180
Net Acres	82,604	244,747

Alternative F

## TAYLOR-HILGARD

This alternative proposes designation as wilderness the Federal land in the same area as alternative E with the addition of parts of EI-549 and NI-549 in the Madison River drainage. The parts of EI-549 to be included are the Cabin Creek, North Fork Creek, Tepee Creek, Sink Creek, Bacon Rind Creek, Migration Creek, and Snowslide Creek. The part of NI-549 to be included lies south of the ridge separating the North and Middle Forks of Bear Creek. End-of-road facility exclusion described in alternative B is also proposed.

Areas that scored the highest in the WARS rating are proposed for wilderness.



## 111 Alternatives/Taylor-Hilgard

Timber management potentials can be realized on the higher quality timber producing areas proposed for nonwilderness.

The Big Sky Snowmobile Trail and many of the more popular snowmobile activity areas are included in the area proposed for wilderness and thus would be closed to that use.

This alternative envisions a land adjustment plan that would acquire the Burlington Northern lands in Bear and Indian Creeks in exchange for National Forest land in Jack Creek.

The area proposed for wilderness is identified as Management Area No. 2 and that proposed for nonwilderness is identified as Management Area No. 3 on alternative map F.

	<u>Wilderness</u>	<u>Nonwilderness</u>
Gross Acres	159,701	229,723
Net Acres	144,034	183,317

### Alternative G

#### TAYLOR-HILGARD

This alternative is the same as alternative E except it also includes as wilderness the part of E1-549 lying east of Sage Creek that drains into the Gallatin River.

This alternative would retain for snowmobiling the Big Sky Snowmobile Trail and the popular snowmobile activity areas of Carrot Basin and Sunlight Basin. Most of the areas rate as having high wilderness quality under the WARS system. A portion of the more productive timber producing areas and the areas with the most potential for wildlife habitat improvement are retained for other uses.

The area proposed for wilderness is identified as Management Area No. 2, and that proposed for nonwilderness is identified as Management Area No. 3 on alternative map G.

	<u>Wilderness</u>	<u>Nonwilderness</u>
Gross Acres	123,344	266,080
Net Acres	122,704	204,647

Alternative H  
TAYLOR-HILGARD

This alternative proposes designating as wilderness the Federal land in the same area as alternative E with the addition of that portion of EL-549 which includes Snowslide and Bacon Rind Creeks. This additional area lies adjacent to Yellowstone National Park which has been administratively endorsed for wilderness.

Timber management potential from the higher quality timber producing areas can be realized, and the popular Big Sky Snowmobile Trail and play areas are available for continued use. Some trail bike use along the trail between Monument Mountain and White Peak would be foregone.

The area proposed for wilderness is identified as Management Area No. 2, and that proposed for nonwilderness is identified as Management Area No. 3 on alternative map H.

	<u>Wilderness</u>	<u>Nonwilderness</u>
Gross Acres	98,244	291,180
Net Acres	97,604	229,747

# 113 Alternatives/West Pioneer

## Alternative A WEST PIONEER

This alternative proposes the area be managed to maintain the presently existing wilderness character and potential for inclusion in the National Wilderness Preservation System. This is a "no action" alternative or no change from the present condition as described by Management Area No. 1. This alternative is depicted on alternative map A.

	<u>Wilderness</u>	<u>Nonwilderness</u>	<u>No Action</u>
Gross Acres <u>53/</u>	0	0	148,150
Net Acres <u>54/</u>	0	0	147,958

## Alternative B WEST PIONEER

This alternative proposes designation of the entire study area as wilderness, with the exception of 3,840 acres of land that contains incompatible uses, principally maintained or constructed roads, and evidence of recent timber harvest activities. The area proposed as wilderness is identified as Management Area No. 2 and the area excluded is identified as Management Area No. 3 on alternative map B.

	<u>Wilderness</u>	<u>Nonwilderness</u>
Gross Acres	144,310	3,840
Net Acres	144,118	3,840

## Alternative C WEST PIONEER

This alternative proposes the entire study area be managed as nonwilderness for a broad range of resource uses as indicated by the description in Management Area No. 3 on alternative map C.

	<u>Wilderness</u>	<u>Nonwilderness</u>
Gross Acres	0	148,150
Net Acres	0	147,958

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53/ Gross acreage includes all lands, both Federal and non-Federal, in the study area.

54/ Net acreage includes only Federal lands in the study area.

Alternative D

WEST PIONEER

This alternative proposes designation as wilderness a core area that comprises about 60 percent of the study area. The fringe surrounding the core has the potential on suitable sites for timber management, minerals management, wildlife habitat management, and motorized and non-motorized recreation activities. The majority of the highly scenic core area with the high mountain lakes is proposed as wilderness.

The area proposed for wilderness is identified as Management Area No. 2, and that proposed for nonwilderness is identified as Management Area No. 3 on alternative map D.

	<u>Wilderness</u>	<u>Nonwilderness</u>
Gross Acres	90,542	57,608
Net Acres	90,542	57,416

Alternative E

WEST PIONEER

In this alternative, the area proposed for wilderness would be reduced from that in alternative D. It would contain the core area, but only from Odell Mountain northward. Much of the high potential mineralized area in the vicinity of Odell Mountain, the popular snowmobile recreation areas in Steel, Warm Springs, and Lacey Creek, and the potential timber management sites in the southern portion would remain in nonwilderness.

The Cob group of mining claims near the head of Stone Creek would be inside the proposed wilderness.

The area proposed for wilderness is identified as Management Area No. 2, and that proposed for nonwilderness is identified as Management Area No. 3 on alternative map E.

	<u>Wilderness</u>	<u>Nonwilderness</u>
Gross Acres	49,573	98,577
Net Acres	49,573	98,385

Alternatives considered but which were eliminated from a detailed study.

One alternative was considered for each of the three areas that would have proposed each entire study area as wilderness, including areas containing uses incompatible with wilderness. The interdisciplinary team decided not to complete a detailed study on this alternative because, in their judgment, it was not a feasible alternative. It was the contention of the team that the major incompatible uses, principally constructed or

# 115 Alternatives/West Pioneer

maintained roads, and associated timber harvest areas, did not meet the spirit or intent of the Wilderness Act and, therefore, any alternative that contained these uses should be considered infeasible.

Alternative B is the maximum wilderness alternative that was analyzed for each study area. Nonconforming use areas have not been proposed as wilderness and have been excluded. The acreage summary for alternative B for the three areas is:

	<u>Acres Proposed As Wilderness</u>	<u>Acres Excluded (Nonconforming Uses)</u>
Mount Henry	20,520	2,930
Taylor-Hilgard	316,141	7,528*
West Pioneer	144,118	3,840

\*Includes 80 acres excluded to provide for end-of-road recreation access facilities.



## EFFECTS OF IMPLEMENTATION

The purpose of this section is to describe the anticipated effects resulting from implementation of each of the alternatives for each of the study areas presented in the previous section.

To facilitate comparison of these effects, they are presented in terms of (1) acreage summaries, (2) estimated current and potential outputs of commodities and services, and (3) expected changes in the environment.

Acreage by Management Area  
Mount Henry

Management Area	(NO Action) Alt. A	Alt. B	Alt. C	Alt. D	Alt. E
<u>Management Area No. 1 (No Action)</u>					
Gross Acres	23,450	-----	-----	-----	-----
Net Acres	23,450	-----	-----	-----	-----
<u>Management Area No. 2 Wilderness</u>					
Gross Acres	-----	20,520	-----	15,590	11,550
Net Acres	-----	20,520	-----	15,590	11,550
<u>Management Area No. 3 Nonwilderness</u>					
Gross Acres	-----	2,930	23,450	7,860	11,900
Net Acres	-----	2,930	23,450	7,860	11,900

Table 9. Estimated Average Annual Outputs  
(Potential - First Decade)  
Mount Henry

Resource or Commodity	Unit	Alt. A		Alt. B		Alt. C		Alt. D		Alt. E	
		(No Action)		(W)	(NW)**	(NW)*		(W)	(NW)**	(W)	(NW)**
Timber - Saw											
Programed Harvest	MMBF	---		---	1,339	6,923		---	3,244	---	3,860
Potential Yield	MMBF	2,538 ***		---	500	2,538		---	1,010	---	1,490
Grazing	AUM	-		-	-	-		-	-	-	-
Recreation											
Developed	RVD	-		---	-	-		---	-	---	-
Dispersed, Motorized	RVD	100		---	100	280		---	100	---	140
Dispersed, Nonmotorized (including hunting and fishing)	RVD	1100		3320	-	2245		3330	-	2540	585
Wildlife Habitat Improvement											
Threatened and Endangered Species	Acres	---		---	-	-		---	-	---	-
Other Species	Acres	---		---	0	30		---	10	---	30

\* Outputs are based on East Fork Yaak, South Fork Yaak, west Kootenai, and Big Creek Unit Plans of which Mount Henry is a part.

\*\* Potential outputs are based on a proportion of the current plan outputs (Alternative C).

\*\*\* Although no timber is programmed for harvesting under this alternative, the figure shown is the contribution of the area to the total potential yield for the Forest.

Projected Programed Timber Harvest (MMBF)  
Mount Henry

## Alternatives

Decade	A*	B	C	D	E
1	0	13.392	69.226	32.437	38.600
2	0	3.218	38.065	12.829	15.440
3	0	7.544	60.613	15.411	32.996
4	0	6.549	49.477	18.785	15.613
5	0	6.120	39.849	15.526	26.146
6	0	6.403	18.828	9.622	11.241

\* Although no timber is programed for harvesting under this alternative, the area does contribute to the total potential yield for the Forest.

Table 10. Economic Efficiency by Alternative  
(Present Net Worth in Dollars at  
4 Percent Discount Rate)  
Mount Henry

## Alternatives

Resource or Commodity	A	B	C	D	E
Timber	---	4,114,261	24,170,765	9,066,796	12,723,131
Minerals*	---	---	---	---	---
Recreation**	502,227	630,510	514,358	632,643	596,512

\* The dollar value is too difficult to estimate.

\*\* All costs and benefits through the year 2025 are included.

Table 11. Total Annual Employment and Income  
Generated by Alternatives  
Mount Henry

## Alternatives

	A	B	C	D	E
Employment (person years)	0.8	5.7	25.3	10.6	15.2
Income (in dollars)	7,560	66,982	303,995	126,388	181,935

Alternative A - No Action

MOUNT HENRY

Soil and Water. Under alternative A, only natural erosion, sedimentation, and water yield is expected to occur because no activities or development will be taking place. The other factors would have zero outputs or impacts.

Air. Because of the small size of the study area, periodic degradation of air quality could occur. This would be primarily in late summer and fall during periods of prescribed burning adjacent to the area.

Wildlife. A very small portion (350 acres) of the study area is considered suitable for habitat improvement. Vegetation on this acreage would not be managed under alternative A.

There would be no significant opportunities to improve fisheries habitat in lakes or streams among all the alternatives.

Threatened and Endangered Species. The study area hasn't been designated as essential grizzly bear habitat although grizzlies may use the area occasionally. The present roadless status which would continue with alternative A contributes to the area's potential value for grizzlies.

Fire. Approximately 16,000 acres of mature lodgepole pine stands are being attacked by mountain pine beetle. This will result in a buildup of downfall timber and snags which may increase the risk of wildfire. Under alternative A, fuels management is limited by the requirement that the wilderness character of the area be maintained.

Insect and Disease. The major insect problem in the Mount Henry area is the mountain pine beetle which has infested stands within and adjacent to the study area. Opportunities for managing stands adjacent to the area in an effort to slow the spread of the beetle is the same for all alternatives. However, under alternative A there is no opportunity to harvest infested stands within the study area. It is expected that the infestation will move throughout the area in 10 years.

Wilderness Quality. Mount Henry received a Wilderness Attribute Rating of 19 during the RARE II process. Under alternative A, the qualities for wilderness would not change. The study area now contains some developments which are not compatible with wilderness. Should the noncompatible developments be excluded from the area, the wilderness quality would increase.

Recreation. It is estimated that Mount Henry presently receives about 1,100 visitor days per year for nonmotorized recreation and about 100 visitor days for motorized recreation. Nonmotorized recreation use includes hiking, roadless hunting, and fishing. Motorized recreation use includes hunting, woodcutting, and sightseeing.

Timber. Impacts to the timber resource under alternative A are measured under opportunities foregone. There is no programmed harvest (see glossary) in the area, but it is estimated that the area has the potential to contribute 25 MMBF per decade to the sustained yield capacity for the Kootenai National Forest. Under alternative A, no harvesting will occur.

Employment, Income, and Economic Efficiency. Table 11 shows the estimated employment and income figures for all alternatives. These figures were derived from the input-output analysis of employment and income impacts. Under alternative A, the total annual person years are estimated to be 0.8 with a total annual income of \$7,560. The measure of economic efficiency is present net worth (table 10). For alternative A, the present net worth is \$502,227 and is entirely recreation costs and benefits.

Population, Minorities, Women, and Civil Rights. Population growth and distribution in Flathead, Lake, and Lincoln Counties is not expected to be significantly affected by implementation of alternative A. Likewise, there would not be a significant impact on minorities, women, or other groups protected by equal employment opportunity and/or civil rights legislation.

American Indian Religious Freedom Act. The Kootenai-Salish Indian Tribe has been consulted and has indicated that there are not any locations of cultural significance within the Mount Henry study area. Under alternative A, no activities will occur and thus no impacts are expected.

Other Effects. Under alternative A, the existing roadless recreation use would continue. No management would take place and thus enhancement of long-term productivity would be foregone, although long-term productivity of resources would be maintained at natural levels.

Because mineral potentials are apparently low, a no action status should result in no significant impacts to the mineral resources.

There are no expected impacts to prime farmlands, range, wetlands, and flood plains under alternative A.

Under the no action status of alternative A, resource potentials are not committed for management. However, this status does not represent an irretrievable commitment of resources.

With alternative A, no planned development management would occur and thus energy requirements would be minor, except in the case of a major wildfire.

There are no expected impacts to urban quality, or historic and cultural resources under alternative A.

There are no known conflicts between the effects of implementing alternative A and the objectives of Federal, Regional, State, and local land use plans or policies for the study area.



Alternative B - Full Wilderness

MOUNT HENRY

Soil and Water. Expected increases in watershed impacts over alternative A are attributed to activities in areas excluded from the proposed wilderness because of prior noncompatible development. Impacts on watershed factors under alternative B are expected to fall below the average for impacts under the other alternatives. This is attributed to minimal developments that would occur under this full wilderness alternative.

Air. Because of the small size of the area, periodic degradation of air quality will occur primarily in late summer and fall during periods of prescribed burning adjacent to the area.

Wildlife. Impacts to wildlife under alternative B would be the same as in alternative A. The 350 acres of potential winter game range would be unavailable for habitat improvement. The lack of roads would contribute to the area's potential value to grizzlies.

Fire. As with alternative A, there is little opportunity to manage fuels under the full wilderness alternative. It is not expected that implementation of a fire plan would reduce fuels accumulation to a significant degree.

Insect and Disease. The effects of insect and disease under alternative B are the same as under alternative A; no opportunities would exist to harvest infected stands within the area. Opportunities to manage stands adjacent to the area to slow the spread would remain under alternative B.

Wilderness Quality. Under alternative B, wilderness quality as represented by the Wilderness Attribute Rating should increase because existing prior developments would be excluded.

Recreation. Under alternative B, nonmotorized recreation use is expected to increase to 3,320 visitor days as shown on table 9. The expected increase is attributed to the attraction a wilderness classification would have for wilderness users.

Motorized recreation use is expected to remain constant. The roads excluded from the wilderness which remain inside the study area boundary would still be available for motorized recreation.

Timber. Under alternative B, most of the timber would not be harvested. It is expected that on lands excluded from the wilderness, an estimated 1.3 MMBF will be harvested in the first decade with an annual potential yield of 0.5 MMBF.



Employment, Income, and Economic Efficiency. The employment and income figures for alternative B are estimated to be 5.7 total annual person years and \$66,982 total annual income. This change is not considered significant in terms of the three-county economy. Present net worth for alternative B is \$4,114,261 for timber and \$630,510 for recreation (table 10), compared with \$502,227 present net worth of recreation under alternative A.

Population, Minorities, Women, and Civil Rights. Since the change in local income and employment is not considered significant, population growth and distribution in the three counties is not expected to be significantly impacted. There would not be a major impact on minorities, women, or other groups protected by civil rights and/or equal employment opportunity legislation.

American Indian Religious Freedom Act. Alternative B, full wilderness, would have no developments affecting tribal sites.

Other Effects. Under alternative B, roadless recreation use would continue and increase. Other resource management will not be substantial.

Because mineral potentials are apparently low, a wilderness classification should not significantly impact the mineral resource.

There are no expected impacts to prime farmlands, range, wetlands, and flood plains under alternative B.

Under alternative B, little developmental management would occur. It is estimated that approximately 7,500 gallons of fuel per year would be needed for administrative, road construction and reconstruction, and associated recreation costs.

There are no expected impacts to the urban quality or historic and cultural resources under alternative B.

No conflicts are known between the effects of implementing alternative B and Federal, Regional, State, and local land use plans and policies.

Alternative C - Nonwilderness - Manage According to Existing Plans  
MOUNT HENRY

Soil and Water. Alternative C represents the full development alternative should the unit plan for Mount Henry be fully implemented. Compared with the other alternatives, alternative C is estimated to have the greatest impact on soil and water although the increases over the no action alternative are not considered to be unacceptable.

Air. Periodic degradation of air quality will occur primarily in late summer and fall during periods of prescribed burning. As logging occurs, localized amounts of road dust will become airborne but should be controlled somewhat.

Wildlife. Under alternative C, opportunities to improve winter range (350 acres) would exist. Conversely, developmental activities could affect potential grizzly bear habitat.

Fire. Alternative C would allow an opportunity for fuels management, specifically in those areas which contain the bulk of infested lodgepole.

Insect and Disease. Opportunities to salvage infected stands would occur under alternative C on the portion of the area specified in the unit plan.

Wilderness Quality. Wilderness would be foregone under this alternative; however, roadless allocation would preserve the primitive character of the Mt. Henry core area, the Vinal Creek Trail, and the area around Hoskins Lake.

Recreation. Nonmotorized recreation under alternative C would be associated with the Mt. Henry core area, the Vinal Creek-Windy Creek Canyon, and Hoskins Lake. It is estimated that 2,200 nonmotorized visitor days could be expected annually under alternative C. Motorized recreation is expected to increase 180 visitor days over the no action alternative because of additional road construction.

Timber. The timber resource under alternative C would be managed subject to hydrologic and other environmental constraints. It is expected that 69 MMBF of timber could be harvested during the first decade. The potential yield of the area managed for timber is 2.5 MMBF annually. Harvest in the first decade would be higher than the potential yield due to age of the timber and insect buildup in the lodgepole pine.

Employment, Income, and Economic Efficiency. Table 11 shows the employment and income figures for alternative C. The total annual employment supported by this area is estimated to be 25.3 person years with a total annual income of \$303,995. Under alternative C, present net worth for timber would be \$24,170,765 and \$514,358 for recreation. This present net worth is the highest for any of the alternatives and thus represents the most economically efficient allocation of resources.

Population, Minorities, Women, and Civil Rights. The change in local employment and income will not be significant with implementation of alternative C, and there are no major effects expected on population growth and distribution. There would not be a significant impact on minorities, women, or other groups protected by civil rights and/or equal employment opportunity legislation.

American Indian Religious Freedom Act. The Kootenai-Salish Indian Tribe has been consulted and has indicated there are not any locations of cultural significance within the Mount Henry study area. Projects scheduled under alternative C would be reviewed by the Kootenai-Salish Tribe prior to beginning.

Other Effects. Management of the resources in the area should result in the maintenance and enhancement of long-term productivity. Temporary impacts caused by developmental activities could be expected to occur under alternative C. Development of portions of the area would represent an irreversible commitment of the resources and a loss of the wilderness option on those portions.

The expected energy requirements for alternative C are estimated to be about 27,000 gallons of fuel annually. This includes costs of administration, road construction and reconstruction, and recreation use.

There are no expected impacts to urban quality or historic and cultural resources under alternative C.

Although there is little apparent mineral potential, alternative C allows for mineral development should mineral resource be found through additional investigation.

There are no impacts expected on prime farmlands, range, wetlands, and flood plains under alternative C.

There are no known conflicts between the effects of implementing alternative C and Federal, Regional, State, and local land use plans or policies.

Alternative D - Modified Wilderness

MOUNT HENRY

Soil and Water. Alternative D represents a reduced wilderness boundary that excludes noncompatible uses and other areas of high resource values. This alternative would generally result in fewer watershed impacts than alternative C, but slightly more than could be expected under the Full Wilderness Alternative.

Air. Periodic degradation of air quality could occur, primarily in late summer and fall, during periods of prescribed burning adjacent to the area.

Wildlife. Habitat improvement opportunities would be lost around Hoskins Lake as well as in other scattered portions. The area remaining as wilderness may favor grizzly bears.

Fire. Fire management opportunities are similar to those under alternative B (Full Wilderness); little or no opportunity exists to manage fuels.

Insect and Disease. With a reduced wilderness boundary, there are more opportunities to harvest infected stands within the study area, but not to the extent as under alternative C.

Wilderness Quality. The wilderness quality under alternative D would only be affected in terms of reduced acreage. Natural integrity, naturalness, and opportunities for solitude would remain.

Recreation. Nonmotorized recreation is expected to increase slightly over the Full Wilderness Alternative because of an increase in hunting and fishing. This increase in hunting would reflect habitat improvement activities which would result in more game. Motorized use under alternative D would not change.

Timber. Expected timber output under alternative D is 3.2 MMBF annually the first decade, with an annual potential yield of 1.0 MMBF. This is less than half of what would be expected under alternative C (see table 9).

Employment, Income, and Economic Efficiency. Under alternative D, the total annual employment is estimated to be 10.6 person years, and the total annual income is \$126,388. This is not significant in terms of the total three-county economy. Present net worth for alternative D is \$9,066,796 for timber and \$632,643 for recreation. This economic efficiency rating is less than alternative C, but greater than A, B, or E.

Population, Minorities, Women, and Civil Rights. Population growth and distribution should not be significantly influenced by the implementation of alternative D. There would not be a significant impact on minorities, women, or other groups protected by equal employment opportunity and/or civil rights legislation.

American Indian Religious Freedom Act. No impacts to sites of cultural significance are expected to occur.

Other Effects. Those portions of the area being managed for resources will maintain and enhance long-term productivity. Temporary impacts caused by developmental activities could be expected to occur. Impacts could also result from fuels accumulation and bug infestation. Those areas developed would represent an irreversible commitment of resources and a loss of the wilderness option.

The expected energy requirements for alternative D are estimated to be about 10,000 gallons per year, including administrative, road construction and reconstruction, and recreation costs.

Inasmuch as the mineral potential in the area is low, no significant impacts are expected to occur under alternative D.

There are no impacts expected on prime farmlands, range, wetlands, or flood plains under alternative D.

There are no expected impacts to the urban quality or historic and cultural resources under alternative D.

There are no known conflicts between the effects of implementing alternative D and Federal, Regional, State, and local land use plans or policies.

Alternative E - Modified Wilderness

MOUNT HENRY

Soil and Water. Alternative E represents a more reduced wilderness classification than alternative D. Alternative E would result in watershed impacts second only to alternative C. More development would be occurring than under alternative D but not as much as alternative C.

Air. Air quality degradation caused by prescribed burning and logging adjacent to the wilderness could occur intermittently.

Wildlife. Under alternative E, all acres suitable for winter game range would be available for habitat improvement. That part remaining wilderness could be valuable for grizzly bears.

Fire. Alternative E rates slightly better than alternatives B and D in terms of fuels management because more acres are available for treatment.

Insect and Disease. More acres are available for management under alternative E than alternatives B and D, and thus more opportunities exist to salvage infected stands.

Wilderness Quality. Hoskins Lake and Vinal Creek Trail are excluded from wilderness designation under alternative E. Because Vinal Creek is important to the solitude and recreation opportunity of the study area, the Wilderness Attribute Rating could be reduced from 19 to 18.

Recreation. Nonmotorized recreation use in the wilderness is expected to be about 2,540 visitor days and in the nonwilderness portion, about 585 visitor days. This reflects the management of Vinal Creek and Hoskins Lake for roadless recreation. Motorized use is expected to increase to 140 visitor days over the other wilderness alternatives because more roads would be constructed under alternative E.

Timber. Timber production under alternative E would increase slightly over alternative D, but would be substantially less than alternative C (see table 9).

Employment, Income, and Economic Efficiency. The total annual estimated employment figure for alternative E is 15.2 person years, with a total annual income of \$181,935. This change would not be significant within the three-county economy. Present net worth for alternative E is \$12,723,131 in timber and \$596,512 in recreation, which is greater than alternatives A, B, and C but less than D.

Population, Minorities, Women, and Civil Rights. Population growth and distribution would not be significantly affected by implementation of alternative E. Likewise, the impacts on women, minorities, and other groups protected by equal employment opportunity and/or civil rights legislation are not expected to be significant.



American Indian Religious Freedom Act. No impacts to sites of cultural or religious significance are expected to occur.

Other Effects. Those portions of the area being managed for resources will maintain and enhance long-term productivity. Temporary impacts caused by developmental activities are expected to occur. Impacts could also result from fuels accumulation and bug infestation. Those areas being developed would represent an irreversible commitment of resources and a loss of the wilderness option.

Inasmuch as the mineral potential of the area is low, no significant impacts are expected under alternative E.

Under alternative E, prime farmlands, rangelands, wetlands, and flood plains should not be significantly affected.

The expected energy requirements for alternative E are estimated to be about 13,300 gallons annually, including administrative, road construction and reconstruction, and recreation costs.

There are no expected impacts to the urban quality or historic and cultural resource under alternative E.

There are no known conflicts between the effects of implementing alternative E and Federal, Regional, State, and local land use plans or policies.

Acreage by Management Area  
Taylor-Hilgard

Management Area	(No Action) Alter- native A	Alter- native B	Alter- native C	Alter- native D	Alter- native E	Alter- native F	Alter- native G	Alter- native H
Management Area No. 1 (No Action)								
Gross Acres	389,424	--	--	--	--	--	--	--
Net Acres	327,351	--	--	--	--	--	--	--
Management Area No. 2 Wilderness								
Gross Acres	--	377,059	--	157,826	83,244	159,701	123,344	98,244
Net Acres		319,823	--	129,941	82,604	144,034	122,704	97,604
Management Area No. 3 Nonwilderness								
Gross Acres	--	12,365	389,424	231,598	306,180	229,723	266,080	291,180
Net Acres	--	7,528	327,351	197,410	244,747	183,317	204,647	229,747

Acreage Summary by Owner  
Taylor-Hilgard

	<u>Acres</u>
National Forest	325,842
Bureau of Land Management	1,509
State of Montana	3,249
Burlington Northern, Incorporated	46,208
Other Private	<u>12,616</u>
Total	389,424

Acres by Alternative, County and  
Owner for Possible Adjustment Action  
Taylor-Hilgard

	<u>Acres to Acquire</u>		
	<u>BNI</u>	<u>Other Private</u>	<u>Total</u>
<u>Alternative B</u>			
Madison	37,934	6,931	44,865
Gallatin	<u>6,714</u>	<u>2,430</u>	<u>9,144</u>
Total	44,648	9,361	54,009
<u>Alternative D</u>			
Madison	21,916	3,412	25,328
<u>Alternative F</u>			
Madison	12,470	640	12,110

Table 12. Estimated Average Annual Outputs  
(Potential - First Decade)  
Taylor-Hillgard

Resource or Commodity	Unit	Alt. A		Alt. B		Alt. C		Alt. D		Alt. E		Alt. F		Alt. G		Alt. H	
		(No Action)	Potential	(W)	(NW)**	Potential	(NW)*	(W)	(NW)**	Potential	(W)	(NW)**	(W)	Potential	(W)	(NW)**	(W)
Timber - Saw Programmed Harvest	MMBF	---	---	---	0.62	13.29	---	---	11.66	---	---	---	---	---	---	10.61	---
Potential Yield	MMBF	10.58***	---	---	0.38	10.58	---	---	9.62	---	---	---	---	---	---	9.15	---
Grazing	AUM	11,428	10,715	10,715	900	12,059	1,813	10,122	1,371	10,585	1,592	10,355	10,185	1,771	1,371	10,585	10,585
Recreation Developed	RVD	2,000	---	---	9,600	43,200	---	---	43,200	---	---	---	---	---	---	43,200	43,200
Dispersed, Motorized	RVD	8,700	---	---	0	18,600	---	---	12,800	---	---	---	---	---	---	15,200	15,300
Dispersed, Nonmotorized (Including hunting and fishing)	RVD	63,500	122,100	122,100	0	128,700	36,500	89,300	27,500	98,400	44,000	80,700	39,500	85,500	31,800	93,600	93,600
Wildlife Habitat Improvement Threatened and Endangered Species	Acres	---	---	---	0	10	---	---	10	---	---	---	---	---	---	10	10
Other Species	Acres	---	---	---	40	2,100	---	---	1,500	---	---	---	---	---	---	1,600	1,600

\* Outputs are based on Beaverhead Forest Plan and part 1 of the Multiple Use plan for the Beaverhead and Gallatin National Forests.

\*\* Potential outputs are based on a proportion of the current plan outputs (alternative C).

\*\*\* Although no timber is programmed for harvesting under this alternative, the figure shown is the contribution of the area to the total potential yield for the Forests.

Projected Programed Timber Harvest (MMBF)  
Taylor-Hilgard

A L T E R N A T I V E S

Decade	A*	B	C	D	E	F	G	H
1		6.18	132.92	116.62	130.46	104.96	106.14	128.07
2		7.26	176.09	167.73	169.86	150.94	132.94	166.43
3		5.94	234.92	214.95	227.69	197.01	183.96	224.19
4		7.46	213.29	203.13	205.36	177.18	169.76	201.43
5		5.22	205.85	189.49	198.79	165.96	165.38	194.30
6		5.86	146.18	136.24	138.92	115.12	116.58	134.03

\*Although no timber is programed for harvesting under this alternative, the area does contribute to the total potential yield for the Forest.

Table 13. Economic Efficiency by Alternative  
(Present Net Worth in Dollars at 4 Percent Discount Rate)  
Taylor-Hilgard

A L T E R N A T I V E S

Resource or Commodity	A	B	C	D
Timber	---	2,582,461	58,846,270	55,115,983
Minerals*	---	---	---	---
Recreation**	21,996,148	32,692,473	21,996,148	27,268,961
Range***	---	---	---	---

Resource or Commodity	E	F	G	H
Timber	56,967,732	49,422,259	46,713,495	55,598,248
Minerals*	---	---	---	---
Recreation**	25,588,317	27,769,335	27,014,153	26,120,860
Range***	---	---	---	---

\* The dollar value is too difficult to estimate.

\*\* All costs and benefits through the year 2025 are included.

\*\*\* The difference in change between alternatives is not significant, therefore no value is shown.

Table 14. Total Annual Employment and Income  
Generated by Alternatives  
Taylor-Hilgard

<u>A L T E R N A T I V E S</u>				
	A	B	C	D
Employment				
(person years)	42.4	49.6	132.3	130.4
Income				
(In dollars)	392,050	464,553	1,402,863	1,371,481
	E	F	G	H
Employment				
(person years)	131.4	123.4	122.9	133.8
Income				
(In dollars)	1,429,822	1,329,266	1,327,150	1,408,278



Alternative A - No Action

TAYLOR-HILGARD

Soil and Water. Since there would be no developmental activity under alternative A, the existing soil and water conditions are likely to remain the same. Only natural changes or actions on private lands will affect the existing condition. There will be no opportunities for soil and water improvement projects on the National Forest lands.

The possible development of some private lands exists with this alternative. The effects of private land development on soil and water cannot be estimated because the extent and nature of the activity is unknown.

Air. Under alternative A, there would be little change in the present air quality conditions of the area. Effects on air quality could come from development on private inholdings or from wildfires.

Wildlife. Alternative A would result in no change in fish or wildlife habitat or management. Management would be to preserve the wilderness character of the area. Movement of big game would be obstructed by insect-infected timber falling in the area.

Threatened and endangered species, grizzly bear and bald eagle, would be protected as required by the Endangered Species Act. Opportunities for habitat improvement would be confined to future fire management areas where unplanned prescribed fire starts.

Fire. Fires in the area would be suppressed as under present management. The present buildup of deadfall and snags is expected to increase the risk of wildfire in the area. The potential for large fires is increasing as more timber is killed by the mountain pine beetle.

Insect and Disease. The study area is presently affected by a major infestation of mountain pine beetle. No action would be taken under alternative A to salvage insect-killed trees within the study area. It is expected that the current epidemic will continue until at least 1982, and the mature stands of lodgepole will be lost to the beetle. Tree planting of lands containing insect-killed timber would not take place under this alternative.

Minerals. Under alternative A, 63,000 acres of existing oil and gas lease applications and all new applications would be considered as though the area were already a designated wilderness. The Forest Service would make recommendations to the Bureau of Land Management considering Section 4(d)(3) of the Wilderness Act, and mitigating measures and stipulations would be developed to protect the area's wilderness character. A full range of alternatives would be considered from withdrawal from mineral entry to leasing with standard stipulations.

Wilderness Quality. Under alternative A, the present wilderness quality would not change. Management would continue to preserve the wilderness character of the area. It is possible that some private lands would be developed.

Recreation. Under alternative A, all present recreation uses would continue. Nonmotorized use includes hiking, cross-country skiing, hunting, fishing, and horseback riding, and motorized recreation use includes snowmobiling, trail bike riding, and other off-road vehicle use. All forms of recreation use are expected to increase.

Timber. Under alternative A, all opportunities for timber harvest and management activities are foregone. A potential harvest of approximately 13 million board feet per year on a sustained yield would be lost.

Employment, Income, and Economic Efficiency. Table 14 shows the estimated employment and income figures for all alternatives. These figures were derived from the input - output analysis of employment and income impacts. Under alternative A, the total annual person years is estimated to be 42.4 with a total annual income of \$392,050. The measure of economic efficiency is present net worth (table 13). For alternative A, the present net worth is \$21,996,148 (recreation costs and benefits only).

Population, Minorities, Women, and Civil Rights. Population growth and distribution in Gallatin and Madison Counties is not expected to be significantly affected by implementation of alternative A. Likewise, there would not be a significant effect on minorities, women, or other groups protected by equal employment opportunity and/or civil rights legislation.

American Indian Religious Freedom Act. The Indian tribes known historically to have inhabited the area have been asked to review projects in the Madison Range. At this time there is no indication that there are sites significant to their culture within the study area boundary.

Landownership. Under alternative A there would be no change in the status of the 62,000 acres of non-Federal land within the study area. No land adjustment measures would be acted upon. Owners of private lands within the study area may seek rights of access across National Forest lands to utilize their lands.

Range. Under this alternative there would be no change in the present grazing use. No new range improvements would be made on the National Forest lands. Present use of motorized vehicles to manage the grazing use and maintain the existing fences and water developments would continue.

The present level of domestic grazing is 11,428 animal unit months.

Other Effects. Under alternative A, the existing motorized and non-motorized recreation uses would continue for the short term.

Energy requirements would be minor because no developments are planned.

There would be no man-caused adverse environmental effects associated with alternative A.

There would be no adverse effects to urban quality, or historic and cultural resources under alternative A. There are no expected effects to prime farmlands, rangelands, wetlands, and floodplains under alternative A.

There are no known conflicts between the effects of implementing alternative A and the objectives of Federal, Regional, State, and local land use plans or policies for the study area.

Alternative B - Full Wilderness  
TAYLOR-HILGARD

Soil and Water. Minor increases in adverse watershed impacts over alternative A are attributed to activities in areas excluded from proposed wilderness because of prior noncompatible developments. Adverse impacts on watershed resources are expected to be below the average for the other alternatives. Some development or resource use on private lands would be expected, including timber harvest, private land subdivision for recreation development, and oil and gas exploration and possible development.

Adverse watershed impacts to National Forest lands would be from natural causes such as landslips or large wildfires. Road development across National Forest lands to private lands may also occur.

Air. Possible degradation of air quality would be the same under this alternative as in alternative A. Any adverse effects on air quality would come from outside the area or from prescribed slash burning on private lands within the area. Temporary air quality degradation may also occur from wildfire in the area.

Wildlife. Effects on fish and wildlife under this alternative would be the same as under alternative A.

Habitat improvement in lands recommended for wilderness under this alternative would be permitted only to enhance the wilderness resource and/or promote the perpetuation of a threatened or endangered species. Projects would require approval of the Chief of the Forest Service. Some 127,500 acres of the lands proposed for wilderness have been identified for potential habitat improvement. Wildlife habitat improvement would be confined to future fire management areas where unplanned prescribed fire starts.

Threatened and endangered species found within the study area (grizzly bear and bald eagle) would receive specific consideration in a subsequent wilderness management plan. All wilderness management activities would consider the welfare of these species. Decisions as to trail locations, outfitter permits, campsites, and other wilderness user controls would be carefully analyzed for possible adverse effects on these species, as required by the Endangered Species Act.

Fire. The possibility for large wildfires is expected to increase due to the creation of large areas and heavy concentrations of dry fuel by the mountain pine beetle infestation. Fire control efforts would be difficult in large areas without access roads.

Insect and Disease. The present epidemic of mountain pine beetle is expected to continue killing lodgepole pine until at least 1982. No opportunity would be available to salvage the dead trees for lumber production or firewood under alternative B.

Minerals. Under alternative B, the area would be available for mineral development and leasing until December 31, 1983, in accordance with the Wilderness Act. No decision will be made in this statement regarding recommendations for granting or denying the 63,000 acres of oil and gas lease applications pending in the study area. Following this study, an environmental analysis will determine the effects of oil and gas leasing and make recommendations. A full range of alternatives would be considered from withdrawal from mineral entry to leasing with standard stipulations.

Landownership. The area proposed for wilderness in alternative B contains 54,009 acres of private land and 3,227 acres of State of Montana land. Of the private land some 45,000 acres are owned by Burlington Northern Inc., and the remaining 9,000 acres are in other private ownership. Burlington Northern has applied for access across the National Forest land to harvest insect-killed and other timber on their lands. Since such use would be incompatible with wilderness management and wilderness classification applies only to Federally-owned lands within the wilderness boundary, this alternative assumes that the Burlington Northern lands would be acquired into Federal ownership. Under the Wilderness Act acquisition may be by purchase from a willing seller, exchange for other Federal lands outside the wilderness, or by Congressional action.

It is not known if management of the other private lands would be incompatible with wilderness management of the Federal lands. Presently existing incompatible uses on the private lands have been excluded from the area proposed by wilderness under alternative B.

Management of the 3,227 acres of State land would probably not be incompatible with wilderness management of the Federal land.

Wilderness Quality. Under alternative B, wilderness quality as represented by the Wilderness Attribute Rating System should increase because existing prior nonconforming development would be excluded.

Recreation. Under alternative B, nonmotorized recreation is expected to increase to 122,100 recreation visitor days. Developed recreation use at the Spanish Creek campground is expected to increase to 9,600 recreation visitor days.

Existing snowmobile and trail bike use would be curtailed. The popular "Big Sky Trail" would no longer be available to snowmobilers within the area identified for wilderness.



Timber. Under alternative B, most of the commercial timber and firewood would be unavailable for use. It is expected that some timber would be harvested from National Forest lands excluded from the proposed wilderness. The area excluded could produce a sustained yield of approximately 570,000 board feet per year.

Employment, Income, and Economic Efficiency. Under alternative B, employment is expected to be 49.6 person years annually. Total annual income is expected to be \$464,553. Present net worth is estimated at \$35,274,934 considering timber and recreation values. There is an additional value for domestic grazing, but opportunities for range improvements would be restricted. Mineral values are not known.

Population, Minorities, Women, and Civil Rights. Implementation of alternative B would result in about the same number of jobs as in alternative A.

American Indian Religious Freedom Act. Alternative B would have no effect on any known tribal sites.

Range. Under this alternative there would be no change in the present grazing use as a result of designation of the National Forest land for wilderness. There could be some small increase in grazing as a result of range improvements on the National Forest land proposed for nonwilderness.

Existing water developments and fences would be maintained. Use of motorized vehicles for monitoring National Forest land proposed for wilderness would be evaluated to determine the need for established livestock grazing operations.

The potential for domestic grazing under alternative B is estimated to be 11,615 animal unit months.

Other Effects. Under alternative B, nonmotorized roadless recreation management would continue and increase. Long-term productivity of the area for timber production would be foregone.

Adverse environmental effects caused by man-made development would not occur. Adverse environmental effects from natural causes such as insect, disease, and wildfire would continue and would not be lessened by management except to enhance the wilderness resource.

Alternative B does not represent an irretrievable commitment of resources.

Under alternative B, only a minor amount of developmental management would occur. It is estimated that approximately 4,500 gallons of fuel per year would be needed for administration, road construction, and recreation management.



There are no expected adverse effects to the urban quality or historic and cultural resources and prime farmlands, range, wetlands, and flood plains under alternative B.

This alternative would eliminate the possibility to consider application for construction of a 161-kV transmission line from Ennis to Big Sky across National Forest land in Jack Creek or Cedar Creek.

The management objectives for the Burlington Northern lands are different from that proposed for the National Forest lands in this alternative. Therefore, it appears necessary to acquire those non-Federal lands. No other conflicts are known between this alternative and the objectives of Federal, Regional, State, and local land use plans or policies.

Alternative C - Nonwilderness

TAYLOR-HILGARD

Soil and Water. Compared to the other alternatives, alternative C is estimated to have the greatest potential for adverse impacts to soil and water resources. Projects or activities which would cause unacceptable effects to the soil or water would not be permitted. State and Federal standards for water quality would be met.

Alternative C would retain the potential where feasible to rehabilitate areas of natural landslips to mitigate natural siltation of the area's waters.

Air. Alternative C would have the greatest potential for air quality degradation of all the alternatives.

Possible sources of air degradation would include dust from road construction and use as well as periodic smoke from prescribed burning and wildfires. Air quality degradation may also result from activities associated with oil and gas leasing should such leases be granted.

Wildlife. Under alternative C, the greatest opportunities would exist to improve fish and wildlife habitat. The Albino Lake area would also be available for habitat improvement. In any planning which may affect threatened and endangered species, the Forest Service would consult with other agencies having responsibility and expertise in wildlife management to insure protection as required under the Endangered Species Act.

Fire. Alternative C would allow an opportunity for fuels management in those areas of high fire risk resulting from the mountain pine beetle epidemic.

Insect and Disease. Alternative C would allow the greatest opportunity to salvage timber killed by mountain pine beetle and provides the best opportunity for controlling future infestations. The insect infestation is expected to continue killing large amounts of trees until at least 1982.

Minerals. Alternative C would provide for a future environmental analysis of the 63,000 acres of pending oil and gas lease applications. It would also provide the greatest opportunity to consider any new lease applications in the area.

Wilderness Quality. Wilderness designation would be foregone under this alternative. Subsequent Forest land management planning would consider nonmotorized dispersed recreation opportunities. Under alternative C, the potential exists to preserve the primitive character of high quality areas for roadless recreation.

Recreation. It is estimated that the area would have a potential for 190,500 recreation visitor days annually under alternative C as shown in table 12.

Timber. Under alternative C, the timber resource would be available for management and harvest. It is estimated that the area may have a potential yield of 10,580,000 board feet annually under alternative C, and a potential harvest of 132,920,000 board feet in the first decade of the 80-year analysis period. Harvest in the early decades is assumed to be higher than the sustained potential annual yield because of the advanced age of the timber and the insect epidemic.

This alternative also provides the best opportunity for improvement through thinning, planting, and other silvicultural treatments. The greatest potential for firewood gathering would be provided with this alternative.

Employment, Income, and Economic Efficiency. As shown in table 14, the total employment under alternative C is estimated to be 132.3 person years. The estimated total annual income is \$1,402,863. These values would have only minor significance in the Gallatin-Madison County area when considered on a percentage basis.

Under alternative C, the estimated present net worth for timber is \$58,846,270, and for recreation is \$21,996,148. This alternative provides the greatest opportunity to increase livestock grazing through more intensive management practices and range improvement projects. The opportunity for hard rock, oil and gas development is highest with this alternative.

Population, Minorities, Women, and Civil Rights. The change in local employment, when considered on a percentage basis for the two-county area, is not significant in expected effects on population growth and distribution. Likewise, there would not be a significant effect on minorities, women, or other groups protected by civil rights and/or equal employment opportunity legislation.

American Indian Religious Freedom Act. Indian tribes have been contacted and asked to review projects in the Madison Range. At this time, there is no indication that sites significant to their culture would be jeopardized by alternative C. Continued careful attention would be given to this concern in subsequent management and resource plans.

Landownership. Under alternative C there would be no change in the present landownership pattern. The present 62,000 acres of private and state land would remain in that ownership and would be managed as the owners choose. The management and development of the National Forest lands would be coordinated with that of the intermingled private lands.

Range. Alternative C provides the greatest opportunity to increase the production of domestic grazing and realize the grazing potential of the area. Under this alternative new fences and water developments could be constructed to control and regulate grazing to obtain better utilization of the grazing allotments. Range management plans would also consider needs of wildlife. Range improvements could benefit wildlife by better controlling and limiting domestic animal grazing on important wildlife ranges.

The potential to domestic grazing under alternative C is estimated to be 12,059 animal unit months.

Other Effects. Management of the resources under future Forest planning would result in the maintenance and enhancement of long-term productivity.

Under alternative C, some temporary adverse impacts could be expected to occur.

Designation of the study area as nonwilderness would represent an irreversible commitment of the wilderness resource.

Alternative C would be expected to have the highest energy costs of all the alternatives. These costs would include fuel for administration, road construction, and recreation activities.

There are no expected adverse effects to urban quality, historic and cultural resources, prime farmlands, rangelands, wetlands, and flood plains under alternative C.

This alternative would provide the opportunity to consider an application for construction of a 161 kV transmission line from Ennis to Big Sky through Jack or Cedar Creeks.

Alternative D - Modified Wilderness

TAYLOR-HILGARD

Soil and Water. Alternative D represents a reduced wilderness area that excludes noncompatible uses, some areas of low wilderness quality, and other areas of high resource values. This alternative would generally result in fewer adverse effects to watershed values than alternative C, but slightly more than could be expected under alternative B.

Adverse impacts to the watershed on lands proposed for nonwilderness could occur as a result of road construction for timber harvest or other developments on National Forest and private lands. Natural landslips or large wildfires could also contribute to adverse watershed effects.

Air. This alternative represents less potential for air quality degradation than alternative C but greater risk than alternatives A and B. Temporary air quality degradation could result from slash burning on both National Forest and private lands. Wildfires on either the lands designated for wilderness or nonwilderness could also contribute to air quality degradation. Localized dust from road traffic would also be expected. Air quality degradation may also result from activities associated with oil and gas leasing should such leases be granted.

Wildlife. Lands proposed for wilderness under this alternative include some 9,000 acres identified as potential habitat improvement area. Habitat improvement on these lands would be only to enhance the wilderness resource. On the lands designated for nonwilderness, habitat improvement potential has been identified on 118,000 acres, which includes a large portion of Jack Creek.

Specific decisions on management of wildlife and threatened and endangered species would be made in subsequent wilderness and Forest land management plans. The Albino Lake area would be available for fish, waterfowl, and wildlife habitat improvement.

Fire. Alternative D would permit planned fuels management activities on those areas designated for nonwilderness. This would provide the opportunity to reduce fire hazards resulting from the present beetle epidemic. Salvage of beetle-killed trees for timber products and fuelwood would also contribute to reduction of the fire risk. Roads constructed for timber harvest and other activities would provide for more efficient fire control than alternative B, but less than alternative C.

Insect and Disease. Alternative D would allow a greater opportunity to salvage timber killed by the mountain pine beetle epidemic than alternative B and would provide increased capability to control future outbreaks. This ability would be only slightly less than alternative C



because most of the lands classified as commercial forest are proposed for nonwilderness under this alternative.

Minerals. Approximately 20,000 acres are presently under application for oil and gas leasing in the area proposed for wilderness under alternative D. While leases are permitted on the lands proposed for wilderness designation, those lands would only be available for consideration until December 31, 1983. Further environmental analysis following this study will be required to consider the pending and future lease applications.

The asbestos mine in Section 35, T5S, R4E is the area proposed for non-wilderness management by alternative D. This is the only mineral deposit in the study area which has been commercially developed, although there have been other discoveries of asbestos.

Phosphate and coal reserves in the area are not thought to be commercially productive. There are no other known commercial mineral deposits in the study area.

Landownership. Implementation of alternative D would require acquisition in Federal ownership by exchange of 21,916 acres of Burlington Northern lands in Cedar, Bear, and Indian Creeks for National Forest land in J1-549 (Jack Creek). This requires a willingness to relinquish Federal lands in Jack Creek with equal value to acquire the private lands proposed for wilderness. Other private lands of 3,412 acres would need to be acquired by purchase or exchange. If the lands were acquired by exchange, other National Forest lands of equal value would be transferred to private ownership.

There are also 2,557 acres of State land within the boundary proposed for wilderness under alternative D. Management of this land by the State would probably not be incompatible with wilderness management of the National Forest lands.

Wilderness Quality. The wilderness quality of those areas as represented by the Wilderness Attribute Rating System should increase because surrounding areas which lower the rating are excluded.

Recreation. Under alternative D, opportunities are provided for all types of recreation. Table 12 shows an estimated 182,000 potential recreation visitor days for the various forms of recreation. The more popular snowmobile recreation areas and the higher quality wilderness recreation areas would be available for those uses.

Timber. Under alternative D, most of the areas identified as commercial forest land are recommended for nonwilderness management. They would be available for timber harvest and management subject to other resource needs and limitations. It is estimated that the area may have a potential yield of 9,620,000 board feet annually and a potential harvest of 116,620,000 board feet in the first decade of the 80-year analysis period under alternative D.



These estimates are for the National Forest land only and do not include the timber on private lands within the study area. If National Forest commercial forest recommended for nonwilderness within the study area were exchanged for private land within the area proposed for wilderness under alternative D, the estimated timber sustained yield for the National Forest land would be reduced by 721,000 board feet per year.

Employment, Income, and Economic Efficiency. Under alternative D, the total annual employment is estimated to be 130.4 person-years. The estimated total annual income is \$1,371,481. These values would have only minor significance in the Gallatin-Madison County area when considered on a percentage basis.

The estimated present net worth for timber is \$55,115,983 and \$27,268,961 for recreation under alternative D.

At present, there are no proven commercial mineral deposits in areas proposed for wilderness.

Population, Minorities, Women, and Civil Rights. The change in local employment, when considered on a percentage basis for the two-county area, is not significant in expected effects on population growth and distribution. Likewise, there would not be a significant effect on minorities, women, or other groups protected by civil rights and/or equal employment opportunity legislation.

American Indian Religious Freedom Act. Indian tribes have been contacted and asked to review projects in the Madison Range. At this time there is no indication that sites significant to their culture would be jeopardized by alternative D. Continued careful attention would be given to this concern in subsequent management and resource plans.

Range. This alternative would represent a slight reduction in grazing potential from alternative C. There would be no reduction in present levels of grazing with the areas designated as wilderness. The full potential for grazing on those areas probably would not be realized.

The potential for domestic grazing under alternative D is estimated to be 11,935 animal unit months.

Other Effects. Under alternative D, long-term productivity of most of the commercial forest land would be enhanced by management of those lands as nonwilderness.

Some temporary adverse environmental effects could be expected from developmental activities on the area designated for nonwilderness management.

Designation of some of the area for nonwilderness management would represent an irreversible commitment of the wilderness resource for those areas.

Energy consumption under this alternative would be higher than alternative B, but probably not be much lower than alternative C because most of the commercial forest land is recommended for nonwilderness management.

There are no expected adverse effects to the urban quality or historic and cultural resources, prime farmlands, rangelands, wetlands, and flood plains under alternative D.

This alternative would provide the opportunity to consider the application for a 161 kV transmission line from Ennis to Big Sky through Jack Creek, but would eliminate some potential route options in Cedar Creek.

The management objectives for the Burlington Northern lands are different from that proposed for the National Forest lands in this alternative. Therefore, it appears necessary to acquire those non-Federal lands. No other conflicts are known between this alternative and the objectives of Federal, Regional, State, and local land use plans or policies.

Alternative E - Modified Wilderness  
TAYLOR-HILGARD

Soil and Water. It is estimated that alternative E would have greater potential to adversely affect soil and water resources than the alternatives proposing larger wilderness, but less potential than alternative C. Projects or activities which would cause unacceptable effects to soil and water would not be permitted. State and Federal standards for water quality would be fulfilled.

Alternative E would retain most of the potential, where feasible, to rehabilitate natural landslip areas to mitigate natural siltation of the area's waters.

Adverse impacts to the watershed on lands proposed for nonwilderness could result from road construction for timber harvest or other developments on National Forest and private lands. Natural landslips or large wildfires could also contribute to adverse watershed effects.

Air. Alternative E represents a generally higher potential for air quality degradation than other alternatives proposing wilderness. More land would be available for developmental activities which might temporarily degrade air quality. However, improved access to much of the area would aid fuels management and fire suppression efforts to reduce wildfire.

Possible sources of air quality degradation would include dust from road construction and traffic and smoke from prescribed burning and wildfires. Air quality degradation may also result from activities associated with oil and gas leasing should such leases be granted.

Wildlife. Under this alternative, wildlife management would be similar to alternative D. More land would be recommended for nonwilderness and would be available for habitat improvement. On the lands recommended for nonwilderness under alternative E, some 121,000 acres of important wildlife habitat would be available for improvement. The Albino Lake area would be available for fish habitat improvement opportunities.

Of the land recommended for wilderness, 6,000 acres have been identified as potential wildlife habitat improvement areas. These opportunities would be foregone.

Fire. Alternative E would allow planned fuels management in most of the areas having a high risk of fire because of the mountain pine beetle epidemic. This alternative would also provide the opportunity to salvage beetle-killed trees on more of the commercial forest land than alternative D, and thereby reduce the heavy fuel loads. Roads constructed for timber harvest and other activities would enhance fire control efficiency more than alternatives with larger wilderness proposals.

Insect and Disease. Alternative E would allow the greatest opportunity to salvage and utilize beetle-killed trees of any of the alternatives proposing wilderness. It would also provide opportunity to control future outbreaks by maintaining healthy timber stands of various ages rather than the large expanses of overmature lodgepole pine present now.

Minerals. Under alternative E, most of the present applications for oil and gas leasing are in areas proposed for nonwilderness management. Of the 63,000 acres of lease applications in the study areas, 10,000 acres are in the area proposed for wilderness in this alternative. Leasing applications in the proposed wilderness and nonwilderness areas will be considered in a future environmental analysis.

No other known commercial mineral deposits are in the areas proposed for wilderness by alternative E.

Landownership. Under alternative E, the only non-Federal land within the area proposed for wilderness is 640 acres of State of Montana land.

Wilderness Quality. The areas of highest wilderness quality as represented by the Wilderness Attribute Rating System are proposed for wilderness in this alternative. Also, there would be a potential to preserve the primitive character of high quality areas for roadless recreation through subsequent Forest planning.

Wilderness Quality of the Bureau of Land Management Beartrap Canyon proposed wilderness would be enhanced by the recommendation of 1,541 acres of adjacent National Forest land for wilderness designation.

Recreation. Under alternative E, opportunities are provided for all types of recreation. All of the most popular snowmobile recreation areas would be available. The highest quality wilderness areas are recommended for wilderness. Areas that have previously been used for primitive recreation are recommended for nonwilderness under this alternative, but this type of recreation could be maintained with allocations in subsequent forest planning.

The estimated total potential recreation visitor days for alternative E are 184,400.

Timber. Under alternative E, practically all the areas identified as commercial forest land are recommended for nonwilderness management. It is estimated that the study area may have a potential sustained yield of 10,210,000 board feet annually and a potential harvest of 130,460,000 board feet in the first decade of the 80-year analysis period. These estimates are for National Forest lands and do not include timber on private lands within the study area.

Employment, Income, and Economic Efficiency. Under alternative E, the total annual employment is estimated to be 131.4 person-years. The estimated total annual income is \$1,429,822. These values would have only minor significance in the Gallatin-Madison County area when considered on a percentage basis. There could be significant impacts on individuals with dude ranch operations as a result of the reduced roadless area.

The estimated present net worth for timber (National Forest land only) is \$56,967,732. The estimated present net worth for recreation is \$25,588,317.

The value of mineral resources which may occur in the study area is presently unknown. Alternative E offers the highest potential for recovering mineral resources of the alternatives which propose wilderness. At present, there are no known commercial mineral deposits within the areas proposed for wilderness.

Population, Minorities, Women, and Civil Rights. The change in local employment, when considered on a percentage basis for the two-county area, is not significant in expected effects on population growth and distribution. Likewise, there would not be a significant effect on minorities, women, or other groups protected by civil rights and/or equal employment opportunity legislation.

American Indian Religious Freedom Act. Indian tribes have been contacted and asked to review projects in the Madison Range. At this time there is no indication that sites significant to their culture would be jeopardized by alternative E. Continued careful attention would be given to this concern in subsequent management and resource plans.

Range. Under alternative E, most of the potential for increasing grazing capacities could be realized because a relatively small area of the grazing allotments are included in the areas proposed for wilderness.

The potential for domestic grazing under alternative E is estimated to be 11,956 animal unit months.

Other Effects. Under alternative E, long-term productivity of most of the commercial forest land would be enhanced by management of those lands as nonwilderness.

Some temporary adverse environmental effects could be expected from developmental activities on the area designated for nonwilderness management.

Designation of 78 percent of the study area as nonwilderness under alternative E would represent an irreversible commitment of the wilderness resource for those areas.

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Energy consumption under this alternative is expected to be similar to alternative C.

There are no expected adverse effects to the urban quality or historic and cultural resources, prime farmlands, rangelands, wetlands, and flood plains under alternative E.

This alternative would provide the opportunity to consider the application for a 161 kV transmission line from Ennis to Big Sky through Jack Creek or Cedar Creek.

There are no known conflicts between the effects of implementing alternative E and the objectives of Federal, Regional, State, and local land use plans or policies for the study area.



Alternative F - Modified Wilderness  
TAYLOR-HILGARD

Soil and Water. Compared to the other alternatives, alternative F would be in the mid-range of potential adverse effects to soil and water and would be very similar to alternative D. Projects or activities which would cause unacceptable effects to the soil or water would not be permitted. State and Federal standards for water quality would be fulfilled.

Alternative F would provide the potential to rehabilitate some areas of natural landslips, where feasible, to mitigate natural siltation in some streams flowing from the area. Natural landslips would continue to be a significant factor in siltation of the area's waters.

Adverse impacts to the watershed on land proposed for nonwilderness management under alternative F could result from road construction for timber harvest or other developments. Access to private inholdings across National Forest lands could also contribute to possible adverse effects on watershed values.

The potential for large wildfires is increasing with the present bark beetle epidemic and could also affect the watershed in future years.

Air. Alternative F represents a mid-range for potential air quality degradation and is similar to alternative D.

Temporary air quality degradation could result from prescribed burning on National Forest and private lands designated nonwilderness. Wildfires on lands designated for wilderness or nonwilderness could also contribute to temporary air quality degradation. Localized dust from road traffic could also be expected.

There is also a slight possibility of air contamination from activities associated with oil and gas leasing should such leases be granted.

Wildlife. Lands proposed for wilderness recommendation under alternative F include some 9,000 acres identified as potential habitat improvement areas. Habitat improvement on these lands could be done only to enhance the wilderness resource.

On lands recommended for nonwilderness management by alternative F, wildlife habitat improvement potentials have been identified on some 118,000 acres.

The Albino Lake area would be available for lake improvements to benefit fish and waterfowl populations.

Fire. Alternative F would permit planned fuels management activities on 59 percent of the study area proposed for nonwilderness. This would provide the opportunity to reduce fire hazards resulting from the mountain pine beetle epidemic. Salvage of beetle-killed trees for timber and fuelwood would also reduce the fire risk. Roads constructed for timber harvest and other activities in the nonwilderness areas would provide for more efficient and effective fire control than alternative B which proposes a much larger wilderness area.

Insect and Disease. Alternative F offers an opportunity to control future beetle outbreaks. Such control would be through timber management activities to maintain healthy timber stands of various ages and salvage of infested stands.

Minerals. Under alternative F approximately 19,000 acres of the land presently under oil and gas lease application within the study area is proposed for wilderness. Leases are permitted in wilderness areas until December 31, 1983.

Some 75 percent of the pending oil and gas lease applications are in areas proposed for nonwilderness recommendation by alternative F. Further environmental analysis following this study will consider the question of oil and gas leasing in the study area.

No other known or potential commercial mineral deposits are in the areas proposed for wilderness designation by alternative F.

Landownership. Alternative F would require acquisition of 13,110 acres of private land in Bear and Indian Creeks for wilderness designation in exchange for National Forest land in Jack Creek or elsewhere. If the lands were to be acquired by exchange, other National Forest lands of equal value would be transferred to private ownership.

This alternative also contains 2,557 acres of State land within the area proposed for wilderness. Management of the State lands would probably not be incompatible with wilderness management of the National Forest lands.

Wilderness Quality. The proposed wilderness under alternative F contains areas of very high wilderness quality. The wilderness quality as represented by the Wilderness Attribute Rating is higher than alternative D, but slightly less than alternative E.

Under this alternative, wilderness quality values would be lost on areas designated for nonwilderness management. The opportunity exists to preserve the primitive character of high quality areas for roadless recreation through Forest planning.

Wilderness quality of the Bureau of Land Management's Beartrap Canyon proposed wilderness would be enhanced by the recommendation of 1,541 acres of adjacent National Forest land for wilderness designation.

Likewise the wilderness quality of the Yellowstone National Park wilderness proposal would be enhanced by the recommendation for wilderness of the 42,000 acres in area E1-549 which adjoins the Park's wilderness boundary.

Recreation. Under alternative F, many of the most popular snowmobile areas, including the Big Sky Snowmobile Trail, would be closed to that activity.

The highest quality wilderness areas are recommended for wilderness. Many other areas that have previously been used for primitive recreation are recommended for nonwilderness management under alternative F.

The estimated total potential recreation visitor days for alternative F is 178,600.

Timber. Under alternative F, timber harvest potentials would rank as the third lowest. It is estimated that the area may have a potential sustained yield of 9,180,000 board feet annually, and a potential harvest of 104,960,000 board feet in the first decade of the 80-year analysis period. Only National Forest land is considered in this analysis.

These figures for National Forest timber potentials do not consider the possible effects of land exchange to acquire private lands within the area recommended for wilderness. If National Forest lands within the study area are exchanged to acquire private lands for wilderness, these volumes would be substantially lowered. The timber would probably still be managed and harvested under private management.

Employment, Income, and Economic Efficiency. Under alternative F the total annual employment is estimated to be 123.4 person years. The estimated total annual income is \$1,329,266. These values would have only minor significance in the Gallatin-Madison County area when considered on a percentage basis. There would, however, be significant impacts to individuals with dude ranch operations as a result of the reduced roadless area.

The estimated present net worth for timber is \$49,422,259. The estimated present net worth for recreation is \$27,769,335. The value of mineral resources which may be present is unknown.

Population, Minorities, Women, and Civil Rights. The change in local employment, when considered on a percentage basis for the two-county area, is not significant in expected effects on population growth and distribution. Likewise, there would not be a significant effect on minorities, women, or other groups protected by civil rights and/or equal employment opportunity legislation.

American Indian Religious Freedom Act. Indian tribes have been contacted and asked to review projects in the Madison Range. At this time there is no indication that sites significant to their culture would be jeopardized by alternative F. Continued careful attention would be given to this concern in subsequent management and resource plans.

Range. Domestic grazing under alternative F would be similar to alternative D. The potential for domestic grazing under alternative F is estimated to be 11,947 animal unit months.

There would be no decrease in grazing levels on lands recommended for wilderness as a result of that designation.

Other Effects. Under alternative F, long-term productivity of most of the commercial forest land would be enhanced by management of those lands as nonwilderness.

Some temporary adverse environmental effects could be expected from developmental activities on the area designated for nonwilderness management.

Designation of 78 percent of the study area as nonwilderness under alternative F would represent an irreversible commitment of the wilderness resource for those areas.

Energy consumption under this alternative is expected to be very similar to alternative C.

There are no expected adverse effects to the urban quality or historic and cultural resources, prime farmlands, rangelands, wetlands, and flood plains under alternative F.

This alternative would provide the opportunity to consider the application for a 161 kV transmission line from Ennis to Big Sky through Jack Creek or Cedar Creek.

The management objectives for the Burlington Northern lands are different from that proposed for the National Forest lands in this alternative. Therefore, it appears necessary to acquire those non-Federal lands. No other conflicts are known between this alternative and the objectives of Federal, Regional, State, and local land use plans or policies.

Alternative G - Modified Wilderness  
TAYLOR-HILGARD

Soil and Water. Under alternative G, effects to soil and water resources would be similar to alternatives D and F because similar areas have potential for timber harvest and other developments.

Adverse impacts to the watershed on land designated as nonwilderness could occur as a result of road construction for timber harvest or other developments on both National Forest and private lands. Natural landslips or large wildfires could also contribute to adverse watershed impacts.

Air. Alternative G represents similar potential for air quality degradation as alternatives D and F since it also represents a mid-range of development potential of the alternatives. Temporary air quality degradation could result from slash burning on both National Forest and private lands. Wildfires on lands designated for wilderness or nonwilderness could also contribute to air quality degradation. Localized dust from road traffic could also be expected.

There is also the possibility of air contamination from activities associated with oil and gas leasing should such leases be granted.

Wildlife. Lands proposed for wilderness recommendation under alternative G include some 6,000 acres identified as potential habitat improvement areas. Habitat improvement on these lands could be done only to enhance the wilderness resource.

On lands designated for nonwilderness, habitat improvement opportunities have been identified on 121,000 acres.

The Albino Lake area would be available for fish, waterfowl, and wildlife improvement opportunities.

Fire. Alternative G would permit planned fuels management activities on those areas designated for nonwilderness similar to alternatives D and F. This would provide the opportunity to reduce fire hazards resulting from the present mountain pine beetle epidemic. Salvage of beetle-killed trees for timber and fuelwood would also reduce the fire risk. Roads constructed for timber harvest and other activities would provide for more efficient and effective fire control than alternative B which proposes a much larger wilderness.

Insect and Disease. Alternative G would allow opportunities to salvage timber killed by the mountain pine beetle epidemic and would provide capability to control future outbreaks similar to alternatives D and F.



Minerals. Under alternative G, approximately 10,000 acres of pending oil and gas lease applications are in areas proposed for wilderness. Further environmental analysis following this study will be required to consider the pending and future lease applications.

The asbestos mine in Section 35, T5S, R4E is in the area proposed for nonwilderness management by alternative F. This is the only mineral deposit in the study area which has been commercially developed, although there have been other discoveries of asbestos in the area. Phosphate and coal reserves in the area are not thought to be commercially productive. There are no other known commercial mineral deposits in the study area.

Landownership. Under alternative G the only non-Federal land within the area proposed for wilderness is 1,280 acres of State of Montana land.

Wilderness Quality. As in alternative F, the lands proposed for wilderness under alternative G are of very high wilderness quality. This alternative would enhance the proposed Yellowstone Park wilderness along the east boundary of area E1-549. The wilderness quality of the Bureau of Land Management proposed Beartrap Canyon wilderness would be enhanced by the recommendation for wilderness of 1,541 acres of National Forest land adjacent to that area.

Under alternative G, wilderness quality values would be lost on the areas recommended for nonwilderness management. However, opportunity exists to preserve the primitive character of high quality areas for roadless recreation through subsequent Forest land management planning.

Recreation. Alternative G provides for all forms of recreation in the area. Table 12 shows the estimated potential recreation visitor days for the various forms of recreation. The total potential recreation visitor days for alternative G is 183,400. The more popular snowmobile recreation areas would be available, and the higher quality areas would be available for wilderness recreation.

Timber. Alternative G represents the second lowest alternative for sustained timber harvest potential. For alternative G the potential sustained yield is estimated to be 9,150,000 board feet annually, and the potential harvest would be 106,140,000 board feet in the first decade of the 80-year analysis period. These estimates are based on timber stands tentatively considered economically and environmentally operable. Only National Forest land is considered in this analysis.

Employment, Income, and Economic Efficiency. Under alternative G the total annual employment is estimated to be 122.9 person years. The estimated total annual income is \$1,327,150. These values would have only minor significance in the Gallatin-Madison County area when considered on a percentage basis. There would, however, be significant impacts to individuals with dude ranch operations as a result of the reduced roadless area.



The estimated present net worth for timber is \$46,713,495 and for recreation is \$27,014,153 under alternative G.

Recovery of any mineral deposits which may exist in areas designated for wilderness would be restricted after 1983. At present there are no proven commercial mineral deposits in those areas.

Population, Minorities, Women, and Civil Rights. The change in local employment, when considered on a percentage basis for the two-county area, is not significant in expected effects on population growth and distribution. Likewise, there would not be significant effect on minorities, women, or other groups protected by civil rights and/or equal employment opportunity legislation.

American Indian Religious Freedom Act. Indian tribes have been contacted and asked to review projects in the Madison Range. At this time there is no indication that sites significant to their culture would be jeopardized by alternative G. Continued careful attention would be given to this concern in subsequent management and resource plans.

Range. This alternative would represent effects to domestic grazing similar to alternative E. The potential for domestic grazing under alternative G is estimated to be 11,956 animal unit months.

Other Effects. Under alternative G, long-term productivity of most of the commercial forest land would be enhanced by management of those lands as nonwilderness.

Some temporary adverse environmental effects could be expected from developmental activities on the area designated for nonwilderness management.

Designation of some of the area for nonwilderness management would represent an irreversible commitment of the wilderness resource for those areas.

Energy consumption under this alternative would be similar to alternative E.

There are no expected adverse impacts to the urban quality or historic and cultural resources, prime farmlands, rangelands, wetlands, and flood plains under alternative G.

This alternative would provide the opportunity to consider the application for a 161 kV transmission line from Ennis to Big Sky through Jack Creek or Cedar Creek.

There are no known conflicts between the effects of implementing alternative G and the objectives of Federal, Regional, State, and local land use plans or policies for the study area.

Alternative H - Modified Wilderness

TAYLOR-HILGARD

Soil and Water. Alternative H represents the second smallest proposed acreage for wilderness, which is slightly larger than that proposed in alternative E. It includes very few areas with potential for resource harvest activities. Therefore, alternative H would have only slightly less potential for water and soil degradation than alternative E, but would have greater potential for these impacts than the other alternatives with wilderness proposals.

Potential degradation would include water contamination by erosion from road development, logging, oil and gas exploration and development, natural landslips, or large wildfires.

Air. Under this alternative, periodic degradation of air quality could occur as a result of prescribed burning and other resource development activities on the areas proposed for nonwilderness. Such degradation would include potential for air quality degradation from oil and gas leasing.

Wildlife. As in alternatives E and G, wildlife habitat improvement opportunities under this alternative would be constrained on 6,000 acres of land proposed for wilderness. On the lands designated for nonwilderness, habitat improvement potentials have been identified on 121,000 acres. The Albino Lake area would be available for fish, waterfowl, and wildlife improvement opportunities.

Fire. Alternative H would permit planned fuels management activities on those areas designated for nonwilderness. This would provide the opportunity to reduce fire hazards resulting from the mountain pine beetle epidemic. Salvage of beetle-killed trees for timber and fuelwood would also reduce the fire risk. Roads constructed for timber harvest and other activities would provide for more efficient and effective fire control than alternative B, while less than alternative C.

Insect and Disease. Alternative H would allow a greater opportunity to salvage timber killed by the mountain pine beetle epidemic than alternative B, and would provide increased capability to control future outbreaks. This ability would be only slightly less than alternative C because most of the lands classified as commercial forest are proposed for nonwilderness under this alternative.

Minerals. Under alternative H, the same 10,000 acres as in alternatives E and G have pending oil and gas lease applications in proposed wilderness areas. Further environmental analysis following this study will be required to consider these and future lease applications.

The asbestos mine in Section 35, T5S, R4E is in the area proposed for non-wilderness management by alternative H. This is the only mineral deposit in the study area which has been commercially developed, although there have been other discoveries of asbestos in the area. Phosphate and coal reserves in the area are not thought to be commercially productive. There are no other known commercial mineral deposits in the study area.

Landownership. Under alternative H, the only non-Federal land within the area proposed for wilderness is 640 acres of State of Montana land.

Wilderness Quality. This alternative would enhance the wilderness quality of the proposed Yellowstone Park Wilderness which it would join along the east boundary of area E1-549. The wilderness quality of the Bureau of Land Management proposed Beartrap Canyon Wilderness would be enhanced by recommendation of 1,541 acres of adjacent National Forest land as wilderness.

Under alternative H, wilderness quality would be lost on the areas recommended for nonwilderness management. The opportunity exists to preserve the primitive character of high quality areas for roadless recreation through subsequent Forest land management planning.

Recreation. Alternative H provides for all forms of recreation in the area. Table 12 shows the estimated potential recreation visitor days for the various forms of recreation. The estimated total potential recreation visitor days for alternative H is 184,000. The more popular snowmobile recreation would be available and the higher quality areas would be available for wilderness recreation.

Timber. Alternative H is very similar to alternative E from the standpoint of timber available for harvest. Under alternative H the potential sustained yield is estimated to be 9,000,000 board feet per year, with a potential harvest of 128,070,000 board feet in the first decade of the 80-year analysis period. These estimates are based on timber stands tentatively considered economically and environmentally operable. Only National Forest land is considered in this analysis.

Employment, Income, and Economic Efficiency. Under alternative H, the total annual employment is estimated to be 133.8 person years. The estimated total annual income is \$1,408,278. These values would have only minor significance in the Gallatin-Madison County area when considered on a percentage basis.

The estimated present net worth for timber is \$55,598,248 and for recreation is \$26,120,860 under alternative H.

Recovery of any mineral deposits which may exist in areas designated for wilderness would be restricted after 1983. At present there are no proven commercial mineral deposits in those areas.

Population, Minorities, Women, and Civil Rights. The change in local employment, when considered on a percentage basis for the two-county area, is not significant in expected effects on population growth and distribution. Likewise, there would not be a significant effect on minorities, women, or other groups protected by civil rights and/or equal employment opportunity legislation.

American Indian Religious Freedom Act. Indian tribes have been contacted and asked to review projects in the Madison Range. At this time there is no indication that sites significant to their culture would be jeopardized by alternative H. Continued careful attention would be given to this concern in subsequent management and resource plans.

Range. Alternative H is essentially the same as alternative E from the standpoint of effects on domestic grazing. The potential for domestic grazing under this alternative is 11,956 animal unit months.

Other Effects. Under alternative H, long-term productivity of most of the commercial forest land would be enhanced by management of those lands as nonwilderness.

Some temporary adverse environmental effects could be expected from developmental activities on the area designated for nonwilderness management.

Designation of some of the area for nonwilderness management would represent an irreversible commitment of the wilderness resource for those areas.

Energy consumption under this alternative would be the same as for alternative E.

There are no expected adverse impacts to the urban quality or historic and cultural resources, prime farmlands, range, wetlands, and flood plains under alternative H.

This alternative would leave open the opportunity to consider the application for a 161 kV transmission line from Ennis to Big Sky through Jack Creek or Cedar Creek.

There are no known conflicts between the effects of implementing alternative H and the objectives of Federal, Regional, State, and local land use plans or policies for the study area.

Acreage by Management Area  
West Pioneer

Management Area	(No Action)				
	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E
<u>Management Area No. 1</u>					
<u>(No Action)</u>					
Gross Acres	148,150	--	--	--	--
Net Acres	147,958	--	--	--	--
 <u>Management Area No. 2</u>					
<u>Wilderness</u>					
Gross Acres	--	144,310	--	90,542	49,573
Net Acres	--	144,118	--	90,542	49,573
 <u>Management Area No. 3</u>					
<u>Nonwilderness</u>					
Gross Acres	--	3,840	148,150	57,608	98,577
Net Acres	--	3,840	147,958	57,416	98,385



Table 15. Estimated Average Annual Outputs  
(Potential - First Decade)  
West Pioneer

Resource or Commodity	Unit	Alt. A (No Action)		Alt. B Potential (W) (NW)**		Alt. C Potential (NW)*		Alt. D Potential (W) (NW)**		Alt. E Potential (W) (NW)**	
Timber - Saw Programed Harvest	MMBF	---		---	0	1.04		---	0.75	---	1.04
Potential Yield	MMBF	6.22***		---	0.40	6.22		---	4.08	---	5.86
Grazing	AUM	4,897		4,827	70	4,897		3,249	1,648	907	3,990
Recreation Developed	RVD	0		---	0	0		---	0	---	0
Dispersed, Motorized	RVD	700		---	120	700		---	290	---	450
Dispersed, Nonmotorized (including hunting and fishing)	RVD	2,900		3,000	250	2,900		2,000	1,100	1,000	1,900
Wildlife Habitat Improvement Threatened and Endangered Species	Acres	---		---	0	0		---	0	---	0
Other Species	Acres	---		---	0	24,359		---	22,967	---	17,825

\*Outputs are based on part 1 of the Multiple Use Plan for the Beaverhead Forest.

\*\*Potential outputs are based on a proportion of the current plan outputs (alternative C).

\*\*\*Although no timber is programmed for harvesting under this alternative, the figure shown is the contribution of the area to the total potential yield for the Forest.

Table 16. Projected Programed Timber Harvest (MMBF)  
West Pioneer

Decade	A*	B	C	D	E
1	0	0	10.36	7.49	10.36
2	0	5.16	84.97	68.23	69.77
3	0	3.03	72.38	40.69	68.44
4	0	4.64	73.48	57.65	62.50
5	0	2.88	66.51	36.19	62.65
6	0	4.87	69.82	54.74	59.59

\*Although no timber is programed for harvesting under this alternative, the area does contribute to the total potential yield for the Forest.

Estimated Mineral Potential  
Foregone within Each Alternative (in dollars)  
West Pioneer

	Alternatives				
	A	B	C	D	E
Present value of mineral resources (principally molybdenum, gold, and silver)	36,930,000	36,460,000	0	20,100,000	14,400,000

Table 17. Economic Efficiency by Alternative  
(Present Net Worth in Dollars at  
4 Percent Discount Rate)  
West Pioneer

Resource or Commodity	Alternatives				
	A	B	C	D	E
Timber	-	714,196	17,841,975	10,415,695	15,346,346
Minerals	-	470,000	36,930,000	16,830,000	22,530,000
Recreation*	1,322,039	1,966,529	1,322,039	1,724,158	1,543,668
Range**					

\*All costs and benefits through the year 2025 are included.

\*\*The difference in change between alternatives is not significant, therefore, no value is shown.

Table 18. Total Annual Employment and Income  
Generated by Alternatives  
West Pioneer

	Alternatives				
	A	B	C	D	E
Employment (person years)	2.0	5.2	54.7	36.6	51.7
Income (in dollars)	18,697	54,774	611,045	407,217	577,859

Alternative A - No Action  
WEST PIONEER

Soil and Water. No significant soil changes are anticipated, however, some displacement of soil on specific sites could occur with mineral development. Where this disturbance occurs, the area will be revegetated and stabilized. No change in water quality or yield is anticipated.

Air. Little or no significant effect on the present air quality due to activity inside the area will occur. Burning activities outside the area could reduce the air quality on occasion and expected impacts would be sporadic and short term. Federal and State air quality standards will be met.

Wildlife. Wildlife habitat improvement which requires activities like burning is not permissible under current management. The options to manage fish and wildlife habitat are restricted.

Threatened and Endangered Species. The study area has not been designated as essential habitat for any threatened and endangered species.

Fire. Approximately 63,800 acres of forested land in the study area are considered highly susceptible to beetle infestations in the near future. A beetle attack will result in a buildup of downfall timber and snags which will increase the risk of wildfire. Under alternative A, the harvesting of high risk stands is limited by the requirements that the wilderness character of the area be maintained.

Insect and Disease. The major insect problem in the West Pioneer area is the mountain pine beetle which has the potential to infect stands within and adjacent to the study area. Under this alternative, no opportunities would exist for managing the stands to control beetle within the study area. It is expected that an infestation will move into the area in about 3 years.

Wilderness Quality. The West Pioneer area received a Wilderness Attribute Rating of 26 during the RARE II process. Under alternative A the wilderness qualities would be preserved. The study area contains some developments which are not compatible with wilderness. Should the incompatible developments be excluded from the area, the wilderness quality would not increase sufficiently to change the Wilderness Attribute Rating. There is a potential for conflict between maintaining wilderness solitude and use by off-road vehicles and other nonwilderness uses.

Recreation. Dispersed recreation uses would continue to occur extensively over the study area. About 19 percent of this use is motorized, which includes hunting, fishing, and snowmobiling. No access changes are planned in the roads and trails within the study area, and off-road vehicle use will continue. The nonmotorized use is about 81 percent of the total use and consists of roadless hunting, fishing, and cross-country skiing. Firewood gathering would be permitted.

Timber. No timber would be harvested under this alternative. Timber resources are not committed for management, but this does not represent an irretrievable loss.

Employment, Income, and Economic Efficiency. Table 18 shows the estimated employment and income figures for the alternative. These figures were derived from the input-output analysis of employment and income impacts. Under alternative A the total annual person years is estimated to be 2.0, with a total annual income of \$18,697. For alternative A the present net worth (table 18) is \$1,322,039 and consists entirely of recreation costs and benefits.

Population, Minorities, Women, and Civil Rights. Effects upon population growth or distribution in Beaverhead County will be insignificant under this alternative. Since implementation of the alternative is not expected to result in a change in the local income or employment situation, it is not expected that minorities, women, or other groups protected by equal employment opportunity and/or civil rights legislation will be affected significantly.

American Indian Religious Freedom Act. At this time there is no indication that sites significant to Indian culture are present within the study area. Under alternative A, no impacts to sites of cultural significance are expected to occur.

Other Effects. Under alternative A the existing roadless recreation use would continue. No management would take place and enhancement of long-term productivity would be foregone, although long-term productivity of resources would be maintained at natural levels. Some resources, such as timber, will be lost through mortality; but the land capability to produce these resources will remain at existing levels. Adverse effects due to management activities would not occur. However, adverse effects caused by insects, disease, and fire could not be lessened by management under alternative A.

Under the no-action status of alternative A resource potentials can be managed as long as the wilderness character is maintained. However, this status does not represent an irretrievable commitment of resources.



With alternative A no planned developmental management would occur and thus energy requirements would be minor, except in the case of a major wildfire.

There are no expected impacts to urban quality, or historic and cultural resources under alternative A. No impacts to prime farmlands, rangelands, wetlands, and flood plains under alternative A are expected to occur. Present rangeland use will continue.

There are no known conflicts between the effects of implementing alternative A and the objectives of Federal, Regional, State, and local land use plans or policies for the study area.

Mineral potentials are high; alternative A would impact the mineral resources.

Alternative B - Full Wilderness  
WEST PIONEER

Since most of the area in this alternative is wilderness, only those effects relating to wilderness are discussed here. Those effects for the nonwilderness portion are similar to those discussed under alternative C.

Soil and Water. No significant changes are anticipated. Some localized soil erosion may be eliminated as previously disturbed areas become overgrown. If wilderness uses and activities result in disturbance of the present ground cover, management action would be taken to minimize or eliminate the cause of the disturbance.

Impacts on watershed factors under alternative B are expected to fall below the average for impacts under the other alternatives. This is attributed to minimal developments that would occur. No change in water quality or yield is anticipated.

Air. No significant effect on the present air quality due to man's activity inside the area is expected to occur. Burning activities outside the area could reduce the air quality on occasion. These impacts are anticipated to be sporadic and short-term. Federal and State air quality standards will be met.

Wildlife. Fish and wildlife habitat improvement activities would be prohibited. Many dense timber stands could not be opened for big game species. Species requiring undisturbed conditions may be favorably affected.

Threatened and Endangered Species. The study area has not been designated as essential habitat for threatened and endangered species.

Fire. Approximately 63,800 acres of forested land are considered highly susceptible to beetle infestations in the near future. A beetle attack will result in a buildup of downfall timber and snags which will increase the risk of wildfire. Under alternative B, harvesting high risk stands is not permissible, and normal fire prevention and control activities cannot occur. The risk of a large fire will be increased.

Insect and Disease. The impacts of insects and disease under alternative B are the same as under alternative A.

Wilderness Quality. Under alternative B, wilderness quality would increase because existing prior developments would be excluded. This alternative would provide the maximum utilization of the wilderness resource.

Recreation. A shift in traditional use patterns in the study area would occur. About 19 percent of present use is by off-road vehicles which would be prohibited under alternative B. No access changes are planned in the trail network and trails will be maintained.

Timber. A potential annual growth of 46,146 MBF with current technology from 127,858 acres of commercial timber land within the study area will be foregone, except for the small nonwilderness area, which has a potential yield of 0.4 MMBF on 2,634 acres.

Employment, Income, and Economic Efficiency. The employment and income figures for alternative B are estimated to be 5.2 total annual person years and \$54,774 total annual income. This represents a slight increase from alternative A. Present net worth for alternative B is \$714,196 for timber, \$470,000 for minerals, and \$1,966,520 for recreation (table 17), compared with \$1,322,039 present net worth of recreation under alternative A.

Population, Minorities, Women, and Civil Rights. Since the change in local income and employment is not considered significant, population growth and distribution in the county are not expected to be significantly impacted. There would not be a major impact on minorities, women, or other groups protected by civil rights and/or equal employment opportunity legislation.

American Indian Religious Freedom Act. Alternative B, full wilderness, would not have any developments affecting known tribal sites.

Other Effects. Under alternative B, wilderness recreation would continue and increase; other resource management will not be substantial. Adverse impacts caused by insect, disease, and fire could not be remedied by management. The risk of a large fire would be increased.

A full wilderness classification would not commit the timber and wildlife resources for management. However, this status does not represent an irretrievable commitment of these resources.

Under alternative B, little developmental management would occur and energy requirements would be minor, except in the case of a major wildfire. There are no expected impacts to the urban quality or historic and cultural resources under alternative B. There are no expected impacts to prime farmlands, rangelands, wetlands, and flood plains under alternative B.

There are no known conflicts between the effects of implementing alternative B and the objectives of Federal, Regional, State, and local land use plans or policies for the study area.

Because mineral potentials are apparently high, a wilderness classification could significantly impact the mineral resource. The mineral resource is available for location and development until December 31, 1983. Proven mineral claims could continue after this date, but no new claims may be filed, and the opportunity to develop an apparently high potential molybdenum deposit would be foregone. The acreage in non-wilderness would be available for mineral location and development.

Present rangeland use will continue even though wilderness values would be dominant.

Alternative C - Nonwilderness

WEST PIONEER

Soil and Water. Alternative C represents the full nonwilderness alternative. Compared with the other alternatives, alternative C is estimated to have the greatest impact on soil and water, although the increases over the no-action alternative are not considered unacceptable. Uses and activities under alternative C would range from backcountry management to resource development such as timber management, road development, and wildlife habitat improvement. These activities will result in ground disturbance and some soil movement into stream channels. Management will be directed to revegetate or stabilize disturbed areas.

Management activities have the potential to adversely affect water quality through increased sedimentation. However, management direction would provide constraints to insure that established water quality standards are met. About 60 percent of the area could be developed with minimum adverse effects. The area has a feasible water storage site for about 9,000 acre-feet of water on Pattengail Creek outside the study area.

Air. Management activities in the study area which would affect the air quality include prescribed burning, such as slash disposal, fuel reduction or wildlife habitat improvement projects. Because of the short duration and limited extent of these activities, impacts would be limited. As logging occurs, localized road dust will become airborne and would be controlled.

Wildlife. About 24,000 acres would be suitable for habitat improvement.

Threatened and Endangered Species. The study area has not been designated as essential habitat for threatened and endangered species.

Fire. Alternative C would allow an opportunity for fuels management, specifically in those areas which are susceptible to bug infestations. With opportunities afforded through resource development, the risk of a large wildfire will be reduced. Moderately good protection from wildfire can be accomplished.

Insect and Disease. Opportunities to salvage infected stands would occur under alternative C.

Wilderness Quality. The wilderness resource opportunity would be foregone on most of the area. None of the area would be managed for wilderness, but a portion of the area could retain its present roadless character.



Recreation. Existing use would probably continue. Since it is likely that much of the area would not be developed, both nonmotorized and motorized recreation opportunities would exist. Motorized vehicles would be permitted on new primary access roads. Firewood gathering would be permitted.

Timber. There are 88,222 acres suitable for management on productive timber sites throughout the area. The commercial forest land would be available for the production and utilization of timber products. The timber resource under alternative C would be managed subject to hydrologic and other environmental restraints. It is expected that 10 MMBF could be harvested during the first decade. The area has a potential yield of 6.2 MMBF per year.

Employment, Income, and Economic Efficiency. Table 18 shows the employment and income figures for alternative C. The total annual employment is estimated to be 54.7 person years with a total annual income of \$611,045. Under alternative C, present net worth for timber would be \$17,841,975, \$36,930,000 for minerals, and \$1,322,039 for recreation. This is substantially greater than the \$1,322,039 efficiency rating for alternative A.

Population, Minorities, Women, and Civil Rights. There will be an increase in local employment and income with implementation of alternative C. There would not be an adverse impact expected on minorities, women, or other groups protected by civil rights and/or equal employment opportunity legislation.

American Indian Religious Freedom Act. Indian tribes have not indicated that there are sites of cultural significance within the West Pioneer study area. Projects scheduled under alternative C would be reviewed prior to their beginning.

Other Effects. Management of the resources in the area should result in the maintenance and enhancement of long-term productivity. Temporary impacts caused by management activities could be expected to occur under alternative C. Development of portions of the area would represent an irreversible commitment of the resources and a loss of the wilderness option.

With alternative C, planned management would require about 29,000 gallons of fuel annually. This includes costs of administration, road construction and reconstruction, and recreation.

There are no expected impacts to urban quality or historic and cultural resources under alternative C. No impacts are expected on prime farmlands, range, wetlands, and flood plains under alternative C.

There are no known conflicts between the effects of implementing alternative C and the objectives of Federal, Regional, State, and local land use plans or policies for the study area.

The mineral resource would be available for location and development. Alternative C would facilitate exploration and development of significant mineral deposits, primarily molybdenum.

Under alternative C, livestock grazing will continue as prescribed by management objectives. Livestock movement is now limited by downfall in many overmature timber stands. Possible future conflicts with recreation, wildlife, and watershed may affect future use. Range improvements to meet potential or sustain existing AUM's could include structural and nonstructural developments and practices.

Alternative D - Modified Wilderness  
WEST PIONEER

Soil and Water. Alternative D represents a reduced wilderness boundary that excludes noncompatible and other high use areas. This alternative would generally result in fewer watershed impacts than alternative C, but slightly more than could be expected under the full wilderness alternative. No significant changes are anticipated on the portion of the area to be managed as wilderness. Some localized soil erosion may be eliminated as previously disturbed areas become overgrown. If wilderness uses and activities result in disturbance of present ground cover, management action would be taken to minimize or eliminate the cause of the disturbance.

Resource management on the nonwilderness portion would result in ground disturbance and some soil movement in the stream channels. Management will be directed to revegetate or stabilize disturbed areas.

Air. There will be little or no significant effect on the present air quality due to man's activity on the portion of the area within wilderness. Management on the nonwilderness portion could include activities which affect air quality such as prescribed burning for slash disposal, fuel reduction, or wildlife habitat improvement projects. However, any of this pollution would have limited impact because of its short duration and limited extent.

Wildlife. The option to manage wildlife habitat would be open under most conditions in the nonwilderness portion. About 23,000 acres would be available for habitat improvement. About 1,000 acres which would be desirable for habitat improvement would not receive this improvement because they would be within wilderness. Fish habitat improvement opportunities are limited.

Threatened and Endangered Species. The study area has not been designated as essential habitat for threatened and endangered species.

Fire. The risk of a large fire would be increased on the portion of the area in wilderness. The lands in nonwilderness could be managed to minimize the potential loss to fire.

Insect and Disease. With a reduced wilderness boundary, there are more opportunities to harvest infected stands within the study area, but not to the extent as under alternative C. Insect attack and tree mortality on the study area would be inevitable in the near future. The lands in nonwilderness could be managed to minimize the potential loss.

Wilderness Quality. The total land area designated as wilderness is smaller than alternative B. Reduction in size would reduce the opportunity for solitude, pristine scenery, and other wilderness values. The wilderness resource would be foregone in the area allocated to nonwilderness.

Recreation. The portion of the area allocated to wilderness would have a change in recreation use since vehicles would be prohibited and foot travel activities would predominate. On the nonwilderness portion it is likely the area would be developed with roads, and dispersed motorized recreation would increase. All new roads, except primary access routes, would be closed to motorized vehicles. Firewood gathering by mechanical means would be prohibited on the portion proposed for wilderness.

Timber. The potential yield from commercial timber land would be foregone on the wilderness area, but commercial forest land would continue to be available on nonwilderness areas. The nonwilderness portion of the study area has a potential yield of 4.08 MMBF per year.

Employment, Income, and Economic Efficiency. Under alternative D the total annual employment is estimated to be 36.6 person years and the total annual income is \$407,217. This represents an increase from alternative A, but it is not significant in terms of the county's economy. Present net worth for alternative D is \$10,415,695 for timber, \$16,830,000 for minerals, and \$1,724,158 for recreation. This economic efficiency rating is less than alternative C, but greater than A or B.

Population, Minorities, Women and Civil Rights. Population growth and distribution should not be significantly influenced by the implementation of alternative B. There would not be a significant impact on minorities, women, or other groups protected by equal employment opportunity and/or civil rights legislation.

American Indian Religious Freedom Act. No impacts to sites of cultural significance are expected to occur.

Other Effects. Those portions of the area being managed for resources will maintain and enhance long-term productivity. As stated previously, temporary adverse impacts caused by developmental activities could occur. Adverse impacts could also result from fuels accumulation and bug infestation. The developed areas would represent an irreversible commitment of resources and a loss of the wilderness option.

The expected energy requirements for alternative D are estimated to be about 11,000 gallons per year, including administrative, road construction, and recreation costs.

Under alternative D there are no expected impacts to the urban quality, or historical and cultural resources, prime farmlands, rangelands, wetlands, or flood plains.

There are no known conflicts between the effects of implementing alternative D and the objectives of Federal, Regional, State, and local land use plans and policies for the study area.

#### 177 Effects/West Pioneer

The most promising indications of ore are within the area designated for wilderness. Availability for location and development would be restricted after December 31, 1983.

Present rangeland use will continue on the portion of the area in wilderness, even though wilderness values would dominate. On the nonwilderness area, grazing will continue as prescribed by management objectives. Livestock movement is now limited by downfall in many overmature timber stands.



Alternative E - Modified Wilderness  
WEST PIONEER

Soil and Water. Alternative E represents a more reduced wilderness classification than alternative D. Alternative E would result in watershed impacts second only to alternative C. More resource management would be occurring than under alternative D, but not as much as alternative C.

Air. Air quality degradation caused by prescribed burning and logging adjacent to the wilderness portion could occur intermittently.

Wildlife. The option to manage wildlife habitat would be open under most conditions in the nonwilderness portion. About 18,000 acres would be available for habitat improvement. About 6,000 acres would be desirable for habitat improvement but would not receive the remainder of this improvement because of proposed wilderness classification. Fish habitat improvement opportunities are limited.

Threatened and Endangered Species. The study area has not been designated as essential habitat for threatened and endangered species.

Fire. Alternative E rates slightly better than alternatives B and D in terms of fuels management because more acres are available for treatment. The risk of a large fire would be increased for the portion of the area proposed for wilderness. The lands in nonwilderness could be developed to minimize the potential loss to fire.

Insect and Disease. More acres are available for management under alternative E than alternatives B and D. There would be opportunities to salvage infected stands. Most of the productive timber lands are in areas proposed for nonwilderness, and these lands could be developed to minimize the potential loss to insects and disease.

Wilderness Quality. Compared to the other alternatives which propose wilderness, this alternative has the smallest wilderness portion. The reduction in size would limit the wilderness opportunities, but wilderness quality would be retained. Much of the nonwilderness area would likely be developed, although there is a possibility that some of this area could be managed for roadless recreation.

Recreation. The portion of the area allocated to wilderness would prohibit motorized vehicle use. Recreation would be oriented to foot travel activities. Nonmotorized recreation use in the proposed wilderness portion is expected to be about 1,000 visitor days. Some of the area in nonwilderness would be developed with roads, and primary access routes would be open to motorized recreation. Other portions of the nonwilderness area would remain undeveloped by roads, and motorized vehicles could still be inappropriate. Motorized use is expected to increase to 160 visitor days over the other wilderness alternatives because of more road construction under alternative E. Firewood gathering by mechanical means would not be permitted on the proposed wilderness portion.

Timber. Timber production under alternative E would increase slightly over alternative D, but would be less than alternative C (see table 16). The potential yield from commercial timber land would be foregone on the proposed wilderness area. The nonwilderness portion of the area has a potential yield of 5.86 MMBF per year.

Employment, Income, and Economic Efficiency. The total annual estimated employment figure for alternative E is 51.7 person years, with a total annual income of \$577,859. This represents an increase from alternative A, but this change would not be significant within the county's economy. Present net worth for alternative E is \$15,346,346 in timber, \$22,530,000 in minerals, and \$1,543,668 in recreation. This figure is greater than alternatives A, B, and D, but less than alternative C.

Population, Minorities, Women, and Civil Rights. Population growth and distribution would not be significantly affected by implementation of alternative E. Likewise, the impacts on women, minorities, and other groups protected by equal employment opportunities and/or civil rights legislation are not expected to be significant.

American Indian Religious Freedom Act. No impacts to sites of cultural or religious significance are expected to occur.

Other Effects. Those portions of the area being managed for resources will maintain and enhance long-term productivity. Temporary adverse impacts caused by developmental activities are expected to occur. Adverse impacts could also result from fuels accumulation and bug infestation. Those areas being developed would represent an irreversible commitment of resources and a loss of the wilderness option.

The expected energy requirements for alternative E are estimated to be about 19,300 gallons annually, including administrative, road construction and reconstruction, and recreation costs.

There are no expected impacts to the urban quality or historic and cultural resources under alternative E. Likewise, no impacts to prime farmlands, rangelands, wetlands, or flood plains are expected.

The most promising indicators of ore are within the area designated for wilderness. Availability for location and development would be restricted until December 31, 1983.

Present rangeland use will continue on the portion of the area in wilderness, even though wilderness values would dominate. On the nonwilderness area, grazing will continue as prescribed by management objectives. Livestock movement is now limited by downfall in many overmature timber stands. Range improvements to meet potential or sustain existing AUM's could include structural and nonstructural developments and practices.

There are no known conflicts between the effects of implementing alternative E and the objectives of Federal, Regional, State and local land use plans and policies for the study area.

## EVALUATION OF ALTERNATIVES

This section contains the comparison of alternatives with the stated evaluation criteria for each study area. This evaluation provides the basis for the identification of the "preferred" alternative in the next section. The initial evaluation criteria "that all alternatives will comply with existing laws and regulations," has been met.

## EVALUATION OF ALTERNATIVES- Taylor – Hilgard

EVALUATION CRITERIA	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F	Alt. G	Alt. H
	No Action (Present Mgt.)	Maximum Wilderness	Nonwilderness	Modified Wilderness	Modified Wilderness	Modified Wilderness	Modified Wilderness	Modified Wilderness
	389,424 gross acres	W - 377,059 gross acres NW - 12,365 gross acres	W - 389,424 gross acres	W - 157,826 gross acres NW - 231,598 gross acres	W - 83,244 gross acres NW - 306,180 gross acres	W - 159,701 gross acres NW - 229,723 gross acres	W - 123,344 gross acres NW - 266,080 gross acres	W - 98,244 gross acres NW - 291,180 gross acres
Criterion 1 - Provide for quality additions to the National Wilderness Preservation System through consideration of:								
A.--Geographical distribution (weekend visitation opportunities from population centers) in relation to presently classified areas or areas under study for wilderness.	No acreage added to NWPS. Maintains status quo.	Adds 319,823 net acres. Excludes following roads: Cherry Cr., Willow Swamp, Karst, Asbestos, Dudley Cr., Cache Cr., Buck Cr., North Fork Cr., Lightning Cr., Papoose Cr., and Spanish Cr. road and campground.	No acreage added to NWPS.	Adds 129,941 net acres to wilderness.	Adds 82,604 net acres to wilderness.	Adds 144,034 net acres to wilderness.	Adds 122,704 net acres to wilderness.	Adds 97,604 net acres to wilderness.
Presently there are approximately 6,225,000 acres of established wilderness or administratively endorsed wilderness adjacent to or within one days drive of the Taylor-Hilgard area.								
B.--Diversity of ecosystem representation and wilderness-associated wildlife species.		Provides maximum potential for preserving natural functioning ecosystems and vegetative communities.	Provides maximum opportunity for modification.		Similar to Alternative C.			
Area was not selected for wildlife or ecosystem representation in RARE II.								
Threatened and endangered plant and wildlife species are protected by law regardless of land allocation.								
C.--Wilderness Suitability	Contains checkerboard ownership.	Contains checkerboard ownership.	Contains checkerboard ownership.	Most checkerboard ownership planned for acquisition.	All Federal ownership.	Most checkerboard ownership planned for acquisition.	All Federal ownership except 680 acres of State land.	All Federal ownership.
Entire area is suitable except 11,177 acres of roaded and logged land.								
D.--Wilderness quality as determined by the Wilderness Attribute Rating System (WARS).	Not applicable.	23.5	Not applicable.	24.5	26.0	25.6	25.6	25.6
Criterion 2 - Provide opportunities for nonwilderness commodity output through consideration of:								
A.--Diverse recreation opportunities in combination with visitor day potentials.	No change.	Eliminates present snowmobile and trail bike use. Restricts developed recreation, i.e., campgrounds, snowmobile trail grooming, and possible public road through Jack Creek to Big Sky.	Provides greatest opportunity for developed recreation facilities, snowmobiles, trail bikes, new roads for automobile access.	Detracts little from established snowmobile and trail bike use. Restricts developed recreation opportunities primarily in Indian Creek.	Has least effect on restricting existing snowmobile and trail bike use of any of the alternatives which would provide for wilderness additions.	Would eliminate existing snowmobile activity on "Big Sky" snowmobile trail and several snowmobile play areas. Would eliminate existing motor use in Cabin Cr. and Burnt Fork Cr.	Would eliminate existing trail bike use from Monument Mountain to White Peak plus snowmobile "play area" in upper Sage Cr.	Similar to Alternative E. Would eliminate existing trail bike use from Monument Mountain to White Peak.
	74,200 RVD	131,700 RVD	190,500 RVD	182,000 RVD	184,400 RVD	178,600 RVD	183,400 RVD	184,000 RVD
Recreation present net worth at 4 percent.	\$22.0 MM	\$32.7 MM	\$22.0 MM	\$27.3 MM	\$25.6 MM	\$27.8 MM	\$27.0 MM	\$26.1 MM
B.--Opportunities for management of essential and key wildlife habitat.	No change.	No opportunity to accomplish vegetative manipulation for habitat improvement through use of prescribed fire, cutting, spraying, planting or seeding.	Provides greatest opportunity for wildlife habitat improvement.	Similar to Alternative C but on a reduced basis.	Similar to Alternative C but on a reduced basis.	Similar to Alternative C but on a reduced basis.	Similar to Alternative C but on a reduced basis.	Similar to Alternative C but on a reduced basis.
C.--Opportunities for off-road motorized recreation (see A above).								
D.--Water supply.	No change.	Least opportunity to control or increase water supply. No vegetative manipulation or small water storage facilities etc.	Best opportunity to control or increase water supply through vegetative manipulation. Small water storage facilities etc.		Of the alternatives which provide for wilderness, this alternative provides the best opportunity for control of water supply.			Similar to Alternative E.
E.--Sustained timber production under present technology.	Continuation of the no change situation will force a reduction in sustained timber production and disallow harvest of insect killed timber.	Sustained timber production would be drastically reduced. Massive losses of timber would occur due to insect and disease.	Provides greatest opportunity for maintaining sustained timber production.	Little effect.	Little effect.	Little effect.	Timber loss north and west of Monument Peak.	Little effect.
Estimated annual programmed harvest-Timber present net worth at 4 percent.	0 MMBF \$0	.62 MMBF \$2.6 MM	13.29 MMBF \$58.8 MM	11.66 MMBF \$55.1 MM	13.05 MMBF \$57.0 MM	10.50 MMBF \$49.4 MM	10.61 MMBF \$46.7 MM	12.81 MMBF \$55.6 MM
F.--Opportunity for exploration and development of mineral resources where the potential is significant.	Oil and gas lease applications are being held without consideration pending completion of this study. 60,000 acres.	Potential to issue oil and gas leases with restrictive stipulations prior to January 1, 1984. No new leases would be issued after January 1, 1984.	Provides greatest opportunity for both hard rock and oil and gas exploration and development.		Of the alternatives which provide for wilderness designation, this alternative provides greatest opportunity.			
Area is within "Overthrust Belt."								
G.--Sustained potential level of firewood production.	Presently, firewood gathering is permitted.	Massive supply of firewood would be unavailable.	Provides greatest opportunity for firewood gathering.	Provides good opportunity.	Similar to Alternative C.	Provides good opportunity.	Provides good opportunity.	Similar to Alternative C.
H.--Opportunities for other energy needs such as energy transmission corridors.	Consideration of application for 161 KV transmission line being deferred pending study Ennis to Big Sky.	Would eliminate possibility of powerline from Ennis to Big Sky. Would eliminate potential corridor Taylor Fork through Indian Cr. identified by EPA in 1977. Eliminates consideration for low head hydro development.	Would not eliminate East-West powerline corridor consideration.	Eliminate potential Indian Cr. corridor. Eliminates consideration for low head hydro development.	Same as Alternative D. Eliminates consideration for low head hydro development.	Same as Alternative D. Eliminates consideration for low head hydro development.	Same as Alternative D. Eliminates consideration for low head hydro development.	Same as Alternative D. Eliminates consideration for low head hydro development.
I.--Sustained grazing capacity potential.	Potential for increased grazing deferred.	Potential for increased grazing would not be realized.	Provide opportunity to increase grazing.	Potential for increased grazing would be realized on portion of area.	Similar to Alternative C.	Potential for increased grazing would be realized on portion of area.	Potential for increased grazing would be realized on portion of area.	Potential for increased grazing would be realized on portion of area.
J.--Recreation opportunities for handicapped and elderly persons.	Deferred pending completion of study.	Restricts opportunities.	Provides best opportunity.	Provides opportunity.	Similar to Alternative C.	Provides opportunity.	Provides opportunity.	Similar to Alternative C.
Criterion 3 - Provide opportunities for wilderness commodity output potential.								
A.--Dispersed recreation (wilderness)	No change from present management. Under this alternative there would be no wilderness commodity outputs because there would be no wilderness. There would be opportunity for roadless dispersed recreation but not wilderness recreation.	55,800 RVD	All nonwilderness under this alternative. There would be no wilderness commodity outputs because there would be no wilderness. There would be opportunity for roadless dispersed (primitive) recreation but not wilderness recreation.	20,100 RVD	14,200 RVD	21,400 RVD	18,500 RVD	15,700 RVD
B.--Grazing (wilderness)		10,715 AUM		1,813 AUM	1,371 AUM	1,592 AUM	1,771 AUM	1,371 AUM
C.--Wildlife recreation (wilderness)		66,300 RVD		16,400 RVD	13,300 RVD	22,600 RVD	21,000 RVD	16,100 RVD
D.--Mineral commodity outputs are permitted in wilderness areas. New claims and leases may be made until December 31, 1983, and production on valid claims and leases may continue after that date on existing claims and leases.								
Criterion 4 - Provide for equitable consideration of private inholdings:								
The Wilderness Act provides for equitable consideration of private inholdings. Private land as such does not qualify under the law for wilderness designation. The Act specifies wilderness will be Federal land. Private land inholdings may be acquired by exchange or purchase from willing sellers or by congressional action. Private owners have the right to manage their land for their own purposes and the right to access their land for such purposes.	No change. Private inholdings are not affected.	This alternative includes 55,926 acres of private and state lands as proposed wilderness.	All nonwilderness. Private inholdings are not affected.	This alternative includes 27,245 acres of private lands within the wilderness boundary.	This alternative includes no private lands within the wilderness boundary.	This alternative includes 15,027 acres of private lands within the wilderness boundary.	This alternative includes 680 acres of state land but no private land within the wilderness boundary.	This alternative includes no private lands within the wilderness boundary.
Criterion 5 - Provide for resource protection through:								
A.--Minimizing the loss of resource values resulting from fire, insects and disease.	Efforts to minimize resource values loss from Mountain Pine Beetle deferred until study completed.	Provides opportunity for greatest resource loss.	Provides best opportunity to minimize loss.	Similar to Alternative E.	Of alternatives which provide for wilderness this alternative provides least opportunity for loss.	Similar to Alternative E.	Provides some opportunity for loss. Northwest of Monument Peak.	Similar to Alternative E.
B.--Protecting soil productivity by minimizing soil loss.	Efforts to protect soil productivity deferred until study completion.	Provides least opportunity to protect soil productivity by minimizing soil loss resulting from wildfire or other natural phenomena. Also least amount of man-made soil disturbance.	Provides best opportunity to minimize soil loss by increasing opportunities to control wildfire or mitigate other natural phenomena.	Similar to Alternative E.	Of alternatives which provide for wilderness, this alternative provides best opportunity to minimize soil loss.	Similar to Alternative E.	Provides some opportunity for soil loss.	Similar to Alternative E.
Criterion 6 - Contribute towards meeting the Region's RPA program goals.	Defers opportunities to meet goals.	Gallatin timber targets not attainable after 1985. Helps attain Regional wilderness goals. Decreases opportunity to increase dispersed recreation. Decreases opportunity to increase livestock grazing and intensive range management.	Opposite of Alternative B except loss of opportunity to help meet wilderness goal.	Similar to Alternative E.	Assists in Regional RPA goal for wilderness. Of the alternative, detracts the least from meeting the nonwilderness goals listed under Alternative E.	Similar to Alternative E. Some loss of dispersed recreation.	Similar to Alternative E. Some loss to meeting timber and wildlife habitat goals.	Similar to Alternative E. Some loss of timber.
Criterion 7 - Maximize net benefits to society, subject to meeting the criteria for community stability and land use patterns.								
A.--Employment (person years)	42.4	49.6	132.3	130.4	131.4	123.4	122.9	133.8
B.--Income (in dollars)	\$392,050	\$464,553	\$1,402,863	\$1,371,481	1,429,822	1,329,266	1,327,150	1,408,278

# EVALUATION OF ALTERNATIVES - Mount Henry

EVALUATION CRITERIA	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E
	No Action (Present Management)	Maximum Wilderness	Nonwilderness	Modified Wilderness	Modified Wilderness
	23,450 acres	W - 20,520 acres NW - 2,930 acres	W - 0 acres NW - 23,450 acres	W - 15,590 acres NW - 7,860 acres	W - 11,550 acres NW - 11,900 acres
Criterion 1 - Provide for quality additions to the National Wilderness Preservation System through consideration of:					
A.--Geographic distribution (weekend visitation opportunities from population centers) in relation to presently classified areas or areas under study for wilderness.	No acres added to NWPS. Maintain status quo.	Would add 20,520 acres to existing 2.9 million acres located within 250 miles of study area.	No acres added to NWPS.	Would add 15,590 acres to existing 2.9 million acres located within 250 miles of study area.	Would add 11,550 acres to existing 2.9 million acres located within 250 miles of study area.
B.--Diversity of ecosystem representation and wilderness-associated wildlife species.	In the RARE II analysis, Mount Henry was not selected for wildlife or ecosystem representation.				
C.--Wilderness Suitability.	Non-conforming developments are present within the boundary resulting in low suitability.	Non-conforming uses have been deleted - is suitable for wilderness.	Wilderness is foregone to other resources in the LMP.	Non-conforming uses have been deleted - is suitable for wilderness (reduced acreage).	Non-conforming uses have been deleted - is suitable for wilderness (reduced acreage).
D.--Wilderness quality as determined by the Wilderness Attribute Rating System (WARS).	No change in WARS of 19.	Because of removal of non-conforming uses, WARS increases from 19 to 23.	There is no WARS for this alternative.	No change in Alt. B WARS of 23.	Alt. B WARS reduced from 23 to 22 because Vinal Cr. is excluded from wilderness.
Criterion 2 - Provide opportunities for nonwilderness commodity output potential through consideration of:					
A.--Diverse recreation opportunities in combination with visitor day potentials.	Potential: Motorized = 100 RVD Non-motorized = 1180 RVD	Potential: Motorized = 100 RVD Non-motorized = 0 RVD	Potential: Motorized = 280 RVD Non-motorized = 2245 RVD	Potential: Motorized = 100 RVD Non-motorized = 0 RVD	Potential: Motorized = 140 RVD Non-motorized = 585 RVD
B.--Opportunities for management of essential and key wildlife habitat.	No opportunity.	No opportunity.	350 acres of winter game range available for management. This is the total amount available in the area.	Essentially the same as Alt. B except for some minor acreage around Vinal Cr. is available for management.	350 acres of winter game range are available for management.
C.--Opportunities for off-road motorized recreation.	There is presently some limited snowmobile use on Vinal Cr. and Mount Henry-Boulder Pk. ridge.	No opportunity.	Limited snowmobile use on Vinal Cr. and Mount Henry-Boulder Pk. ridge.	No opportunity.	No potential - with Fish Lakes included in wilderness, there is no incentive to use Vinal Cr. trail.
D.--Water supply.	19,000 ac.ft./yr.	19,155 ac.ft./yr.	19,635 ac.ft./yr.	19,230 ac.ft./yr.	19,343 ac.ft./yr.
E.--Sustained timber production under present technology.	Potential Sustained Yield = 2.538 mmbf/yr. Programed Harvest = 0	Potential Sustained Yield = .500 mmbf/yr. Programed Harvest = 13.4 mmbf/first decade	Potential Sustained Yield = 2.538 mmbf/yr. Programed Harvest = 69 mmbf/first decade	Potential Sustained Yield = 1.010 mmbf/yr. Programed Harvest = 32.4 mmbf/first decade	Potential Sustained Yield = 1.490 mmbf/yr. Programed Harvest = 38.6 mmbf/first decade
F.--Opportunities for exploration and development of mineral resources where significant.	The mineral resource in the study area is apparently low.				
G.--Sustained potential of firewood production.	Firewood is not considered applicable to any alternative because of the area's long distance from firewood-using locations.				
H.--Opportunities for other energy needs, such as energy transmission corridors.	Potential transmission corridors have been identified through the Unit Planning Process. The areas identified run south of the study area and thus no alternative would affect opportunities.				
I.--Sustained grazing capacity potential.	There are no grazing permits or potentials in the area and thus no alternative would affect opportunity.				
J.--Recreation opportunities for elderly and handicapped.	The criterion is not considered applicable to the area.				
Criterion 3 - Provide opportunities for wilderness commodity output potential through consideration of:					
A.--Diverse dispersed recreation opportunities in combination with visitor day potentials.		Non-motorized = 3320 RVD - Anticipates wilderness designation would result in an increase of visitor days because of diversion of uses from one wilderness to another.		Non-motorized = 3330 RVD - This is essentially the same as Alt. B but is increased slightly because a portion of winter game range will receive improvement resulting in an increased number of game.	Non-motorized = 2540 RVD - This is essentially the same as Alt. D but recreation use associated with Vinal Cr. and Hoskins Lk. is excluded.
B.--Sustained grazing capacity under wilderness management.	Grazing potential does not exist in the area.				
Criterion 4 - Provide for equitable consideration of private inholdings through consideration of:					
A.--Management options available for private land exchange or management of inholdings.	This criterion is not considered applicable to the area.				
B.--Access opportunities to private land for commodity extraction and land uses, primarily recreation.	This criterion is not considered applicable to the area.				
Criterion 5 - Provide for resource protection through:					
A.--Minimizing the loss of resource values resulting from fire, insects and disease.	Insect: All lodgepole 100 yrs. and 8" would be infected within 10 yrs. with over 50 mmbf lost. Fire: High fire risk associated with insect-killed lodgepole.	Insect: Same as Alt. A; nonwilderness portions contain low-risk stands. Fire: High fire risk associated with insect-killed lodgepole.	Insect: Accomplishes most recovery; salvage 38 mmbf mortality volume - 12 mmbf would be lost. Fire: Low fire risk associated with insect-killed lodgepole.	Insect: 45 mmbf would be lost in first decade; salvage 5 mmbf mortality volume. Fire: High fire risk associated with insect-killed lodgepole.	Insect: 39 mmbf would be lost in first decade; salvage 11 mmbf mortality volume. Fire: Mod-high fire risk associated with insect-killed lodgepole.
B.--Protecting soil productivity by minimizing soil loss.	Sedimentation = 2 cu.yds./yr.	Sedimentation = 9 cu.yds./yr. Sedimentation is associated with road development in each alternative.	Sedimentation = 33 cu.yds./yr.	Sedimentation = 15 cu.yds./yr.	Sedimentation = 21 cu.yds./yr.
Criterion 6 - Contribute towards meeting the Region's RPA program goals.	Estimating the Forest's contribution to RPA, and the effect of each alternative on that contribution, is conjecture without a completed Forest Plan. However, recent MUSYC runs indicate RPA targets for timber can be met until 2005 and then would fall short by the potential yield on the Mount Henry area (2.5 mmbf). -----No alternative should affect the Forest's ability to meet the RPA target for developed recreation. -----No alternative should affect the Forest's ability to meet the RPA target for dispersed recreation.				
Criterion 7 - Maximize net benefits to society, subject to meeting the criteria for community stability and land use patterns.	Timber: \$0 Recreation: \$502,227	Timber: \$4 MM Recreation: \$630,411	Timber: \$24 MM Recreation: \$514,358	Timber: \$9 MM Recreation: \$632,643	Timber: \$12 MM Recreation: \$596,512
Criterion 8 - Provide for resource uses and output levels that minimize rapid change in the existing economic structure of local communities and in land use patterns.	No alternative should create a rapid change in the existing economic structure of local communities (or multicounty impact areas) and in land use patterns in the next ten years.				



# EVALUATION OF ALTERNATIVES - Mount Henry

EVALUATION CRITERIA	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E
	No Action (Present Management)	Maximum Wilderness	Nonwilderness	Modified Wilderness	Modified Wilderness
	23,450 acres	W - 20,520 acres NW - 2,930 acres	W - 0 acres NW - 23,450 acres	W - 15,590 acres NW - 7,860 acres	W - 11,550 acres NW - 11,900 acres
Criterion 1 - Provide for quality additions to the National Wilderness Preservation System through consideration of:					
A.--Geographic distribution (weekend visitation opportunities from population centers) in relation to presently classified areas or areas under study for wilderness.	No acres added to NWPS. Maintain status quo.	Would add 20,520 acres to existing 2.9 million acres located within 250 miles of study area.	No acres added to NWPS.	Would add 15,590 acres to existing 2.9 million acres located within 250 miles of study area.	Would add 11,550 acres to existing 2.9 million acres located within 250 miles of study area.
B.--Diversity of ecosystem representation and wilderness-associated wildlife species.	In the RARE II analysis, Mount Henry was not selected for wildlife or ecosystem representation.				
C.--Wilderness Suitability.	Non-conforming developments are present within the boundary resulting in low suitability.	Non-conforming uses have been deleted - is suitable for wilderness.	Wilderness is foregone to other resources in the LMP.	Non-conforming uses have been deleted - is suitable for wilderness (reduced acreage).	Non-conforming uses have been deleted - is suitable for wilderness (reduced acreage).
D.--Wilderness quality as determined by the Wilderness Attribute Rating System (WARS).	No change in WARS of 19.	Because of removal of non-conforming uses, WARS increases from 19 to 23.	There is no WARS for this alternative.	No change in Alt. B WARS of 23.	Alt. B WARS reduced from 23 to 22 because Vinal Cr. is excluded from wilderness.
Criterion 2 - Provide opportunities for nonwilderness commodity output potential through consideration of:					
A.--Diverse recreation opportunities in combination with visitor day potentials.	Potential: Motorized = 100 RVD Non-motorized = 1100 RVD	Potential: Motorized = 100 RVD Non-motorized = 0 RVD	Potential: Motorized = 280 RVD Non-motorized = 2245 RVD	Potential: Motorized = 100 RVD Non-motorized = 0 RVD	Potential: Motorized = 140 RVD Non-motorized = 585 RVD
B.--Opportunities for management of essential and key wildlife habitat.	No opportunity.	No opportunity.	350 acres of winter game range available for management. This is the total amount available in the area.	Essentially the same as Alt. B except for some minor acreage around Vinal Cr. is available for management.	350 acres of winter game range are available for management.
C.--Opportunities for off-road motorized recreation.	There is presently some limited snowmobile use on Vinal Cr. and Mount Henry-Boulder Pk. ridge.	No opportunity.	Limited snowmobile use on Vinal Cr. and Mount Henry-Boulder Pk. ridge.	No opportunity.	No potential - with Fish Lakes included in wilderness, there is no incentive to use Vinal Cr. trail.
D.--Water supply.	19,000 ac.ft./yr.	19,155 ac.ft./yr.	19,635 ac.ft./yr.	19,230 ac.ft./yr.	19,343 ac.ft./yr.
E.--Sustained timber production under present technology.	Potential Sustained Yield = 2.538 mmbf/yr. Programed Harvest = 0	Potential Sustained Yield = .500 mmbf/yr. Programed Harvest = 13.4 mmbf/first decade	Potential Sustained Yield = 2.538 mmbf/yr. Programed Harvest = 69 mmbf/first decade	Potential Sustained Yield = 1.010 mmbf/yr. Programed Harvest = 32.4 mmbf/first decade	Potential Sustained Yield = 1.490 mmbf/yr. Programed Harvest = 38.6 mmbf/first decade
F.--Opportunities for exploration and development of mineral resources where significant.	The mineral resource in the study area is apparently low.				
G.--Sustained potential of firewood production.	Firewood is not considered applicable to any alternative because of the area's long distance from firewood-using locations.				
H.--Opportunities for other energy needs, such as energy transmission corridors.	Potential transmission corridors have been identified through the Unit Planning Process. The areas identified run south of the study area and thus no alternative would affect opportunities.				
I.--Sustained grazing capacity potential.	There are no grazing permits or potentials in the area and thus no alternative would affect opportunity.				
J.--Recreation opportunities for elderly and handicapped.	The criterion is not considered applicable to the area.				
Criterion 3 - Provide opportunities for wilderness commodity output potential through consideration of:					
A.--Diverse dispersed recreation opportunities in combination with visitor day potentials.		Non-motorized = 3320 RVD - Anticipates wilderness designation would result in an increase of visitor days because of diversion of uses from one wilderness to another.		Non-motorized = 3330 RVD - This is essentially the same as Alt. B but is increased slightly because a portion of winter game range will receive improvement resulting in an increased number of game.	Non-motorized = 2540 RVD - This is essentially the same as Alt. D but recreation use associated with Vinal Cr. and Hoskins Lk. is excluded.
B.--Sustained grazing capacity under wilderness management.	Grazing potential does not exist in the area.				
Criterion 4 - Provide for equitable consideration of private inholdings through consideration of:					
A.--Management options available for private land exchange or management of inholdings.	This criterion is not considered applicable to the area.				
B.--Access opportunities to private land for commodity extraction and land uses, primarily recreation.	This criterion is not considered applicable to the area.				
Criterion 5 - Provide for resource protection through:					
A.--Minimizing the loss of resource values resulting from fire, insects and disease.	Insect: All lodgepole 100 yrs. and 8" would be infected within 10 yrs. with over 50 mmbf lost. Fire: High fire risk associated with insect-killed lodgepole.	Insect: Same as Alt. A; nonwilderness portions contain low-risk stands. Fire: High fire risk associated with insect-killed lodgepole.	Insect: Accomplishes most recovery; salvage 38 mmbf mortality volume - 12 mmbf would be lost. Fire: Low fire risk associated with insect-killed lodgepole.	Insect: 45 mmbf would be lost in first decade; salvage 5 mmbf mortality volume. Fire: High fire risk associated with insect-killed lodgepole.	Insect: 39 mmbf would be lost in first decade; salvage 11 mmbf mortality volume. Fire: Mod-high fire risk associated with insect-killed lodgepole.
B.--Protecting soil productivity by minimizing soil loss.	Sedimentation = 2 cu.yds./yr.	Sedimentation = 9 cu.yds./yr. Sedimentation is associated with road development in each alternative.	Sedimentation = 33 cu.yds./yr.	Sedimentation = 15 cu.yds./yr.	Sedimentation = 21 cu.yds./yr.
Criterion 6 - Contribute towards meeting the Region's RPA program goals.	Estimating the Forest's contribution to RPA, and the effect of each alternative on that contribution, is conjecture without a completed Forest Plan. However, recent MUSYC runs indicate RPA targets for timber can be met until 2005 and then would fall short by the potential yield on the Mount Henry area (2.5 mmbf). No alternative should affect the Forest's ability to meet the RPA target for developed recreation. No alternative should affect the Forest's ability to meet the RPA target for dispersed recreation.				
Criterion 7 - Maximize net benefits to society, subject to meeting the criteria for community stability and land use patterns.	Timber: \$0 Recreation: \$502,227	Timber: \$4 MM Recreation: \$630,411	Timber: \$24 MM Recreation: \$514,358	Timber: \$9 MM Recreation: \$632,643	Timber: \$12 MM Recreation: \$596,512
Criterion 8 - Provide for resource uses and output levels that minimize rapid change in the existing economic structure of local communities and in land use patterns.	No alternative should create a rapid change in the existing economic structure of local communities (or multicounty impact areas) and in land use patterns in the next ten years.				

# IDENTIFICATION OF PREFERRED ALTERNATIVE

## Preferred Alternative

### MOUNT HENRY

The alternatives were evaluated using the evaluation criteria in the preceding section. The criteria were found to be of primary or secondary importance to an evaluation of the area. The primary criteria include: contributions to the National Wilderness Preservation System; contributions to sustained yield; economic and social benefits; and minimizing the loss due to fire, insect, and disease.

Based upon these criteria, alternative C is shown to be the preferred alternative for the Mount Henry wilderness study area.

Alternative C represents the nonwilderness alternative and proposes allocations for resource use based on the unit plan allocations.

Descriptions of the proposed land management plan are contained in the East Fork Yaak, South Fork Yaak, West Kootenai, and Big Creek Unit Plans.

Alternative C has the highest timber production (69 MMBF in the first decade) and the highest present net worth (\$24 million) of any of the alternatives. While this was not the sole determinant, when it was demonstrated that other resource values would not be significantly increased by a wilderness classification, the trade off with the timber resource was considered to be unacceptable. The specific factors were:

1. A wilderness classification would not add appreciably to the National Wilderness Preservation System (NWPS) nor is there a geographic need demonstrated. Wilderness quality (WARS) is relatively low (19) for this Region.

2. Alternative C provides for both roaded and roadless forms of recreation. About 32 percent of the area is devoted to roadless recreation management in the present unit plans.

3. Wildlife habitat, particularly winter game range, is at a premium in the Yaak area. While not of substantial acreage, opportunities to manage the habitat to enhance game are present only in alternatives C and E.

4. Impacts on watersheds, while shown to be greater under alternative C, are not unacceptable.

5. Greater opportunities will exist to salvage insect-killed lodgepole timber stands.

In summary, since this area won't provide a significant contribution to the NWPS, alternative C was selected. Alternative C provides the greatest timber output, will generate the greatest present net worth, and will provide for management of a greater number and variety of resources.

Preferred Alternative

TAYLOR-HILGARD

The preferred alternative is alternative D. The alternatives presented for the Taylor-Hilgard unit were analyzed against the evaluation criteria in the preceding section.

The establishment of an additional 157,826 acres of wilderness in southwestern Montana would not be necessary to provide for a better geographical distribution of wilderness to the National Wilderness Preservation System. This is due to the proximity of established classified areas or areas which have been administratively endorsed for wilderness. However, the classification of a portion of the Madison Range would be responsive to a long-standing local demand for some wilderness in the Madison Range.

Alternative D recommends 1,541 acres of National Forest land be added to the area recommended by the Bureau of Land Management for wilderness in the Beartrap Canyon wilderness proposal. The boundary for this area follows the physiographic rim of the Bear Trap gorge.

The boundary proposed for the Spanish Peaks proposed wilderness in 1968 has been modified slightly to make it possible to be more easily surveyed and identified on the ground. It has also been extended down on the Madison River side of the ridge to include all of the featured peaks inside the proposed wilderness.

Alternative D recommends for wilderness generally those lands which possess the highest attributes for wilderness. Alternative D also provides excellent opportunities for high nonwilderness commodity outputs and dispersed motorized recreation in the areas with lower WARS ratings.

The heavy use on the Big Sky snowmobile trail would be maintained along with the snowmobile "play areas" considered important to those winter sports activists.

In addition to the proposed wilderness, about 20 percent of the study area will likely remain essentially roadless and be available for primitive recreation.

The essential and key wildlife areas which could be improved through special vegetative manipulation practices would be within the area not recommended for wilderness. Planned prescribed burning, planting, seeding, and thinning projects could be accomplished within the non-wilderness area. These efforts would be possible primarily to improve the habitat for elk which migrate through the area and for the threatened grizzly bear.

This alternative provides for a high sustained yield for timber harvest and firewood gathering. The programmed harvest is calculated to be an

average of approximately 11.66 million board feet per year during the first decade. The present net worth of the total timber resource is \$55,115,983.

Possible oil and gas development would not seriously be hampered by alternative D. Most of the Overthrust Belt within the alternative would be available for exploration and development. Approximately 40,000 acres of current lease applications would be located within the nonwilderness portion.

The application for a 161 kV powerline from Ennis to Big Sky through Jack Creek could be considered.

The opportunity to improve access, camp, and picnic sites for use by the elderly or handicapped would be enhanced through selection of alternative D.

Alternative D recommends an addition of 157,826 acres to the National Wilderness Preservation System. This alternative includes 27,245 acres of private land within the area recommended for wilderness. Most of this land is owned by the Burlington Northern, Inc. Burlington Northern has indicated a willingness to exchange out of the proposed wilderness if suitable National Forest lands are made available outside the area.

The opportunities to salvage insect killed timber would be enhanced through selection of alternative D. The timber stands which are highly susceptible to insect attack are also made available for treatment with this alternative.

Soil productivity can be protected with this alternative through proper resource management practices.

The opportunity to meet the Beaverhead and Gallatin National Forests' share of RPA outputs or targets is best provided for with alternative D.

This proposal offers what the Forest Service believes to be the maximum net benefits to society. It provides a quality addition to the National Wilderness Preservation System while providing the opportunity for other Forest uses such as water, wildlife, timber, range, dispersed and developed recreation.



Preferred Alternative

WEST PIONEER

The alternatives were evaluated using the evaluation criteria in the preceding section. Based upon these criteria, alternative C is shown to be the preferred alternative for the West Pioneer wilderness study area. Alternative C represents the nonwilderness alternative and proposes management for resource development.

Primary reasons for selecting alternative C were:

1. Although the West Pioneer area possesses high wilderness characteristics as expressed by the Wilderness Attribute Rating System, it has been assessed through RARE II as not contributing significantly to the National Wilderness Preservation System. The West Pioneer area is within 18 miles of the Anaconda Pintler Wilderness and two areas endorsed for wilderness through RARE II—the West Big Hole and the East Pioneer areas. Existing wildernesses and primitive areas which are within 50 miles of the area have a total acreage of about 2,966,674. In addition, the area is not judged as necessary to attain diversity of ecosystems or wilderness-associated wildlife species.

2. The West Pioneer area has been determined to contain a high molybdenum reserve with a present net worth of \$36.9 million. The mineralized areas cannot be developed and still retain a reasonably pristine character for wilderness management.

3. Alternative C was shown to have the highest present net worth (\$56.1 million) of any of the alternatives.

Secondary reasons for selection of alternative C were:

1. This alternative will permit the greatest dispersed motorized recreation use, primarily snowmobile use.

2. It provides the best opportunities to salvage high risk timber stands threatened by the mountain pine beetle infestation.

3. This alternative provides the greatest opportunity for timber yield.

4. It provides an opportunity for both roaded and roadless forms of primitive recreation activity. About 45 percent of the study area will likely remain essentially roadless and be available for primitive recreation.

This alternative provides the greatest opportunity for mineral development, timber production, wildlife habitat improvement, and dispersed recreation activities compared with the other alternatives.



## CONSULTATION WITH OTHERS

Initial recorded public interest and discussion regarding any of these areas dates from 1958 when former Regional Forester Tebbe announced the establishment of a Hilgard "hold" area of about 150,000 acres. He agreed that the Forest Service would forego developmental activities in the area pending the completion of a wilderness study.

All or portions of the present three study areas were inventoried during the first Roadless Area Review and Evaluation (RARE) in 1972 and 1973. Additional debate resulted between the public and the Forest Service in that process.

In October 1974, the first bill was introduced to establish these three plus an additional seven areas as wilderness study areas. After several years of debate, the Montana Wilderness Study Act was passed in November 1977. The study of these three areas is responsive to that legislation.

In the meantime, RARE II was initiated in mid-1977 and these areas were included in the inventory and the accompanying analysis. When the RARE II draft environmental statement was issued, the public did not respond at any length regarding these areas since they were advised that a separate study under the Montana Wilderness Study Act would follow.

In 1979, following RARE II a good deal of dialogue was directed to the Forest Service in terms of the best study process to follow, the time schedule, and the data needs. The latter subject centered around the question of the adequacy of the timber data. To help resolve this question, the Regional Forester formed a citizen's timber statistics committee in August 1979. Their recommendations were forwarded to the Regional Forester in February 1980.

In September 1979, the Forest Service conducted 12 workshops (7 of which dealt with the 3 study areas in this environmental statement) in western and central Montana. More than 800 people participated in the workshops to determine the resource issues the public wanted addressed in making recommendations for the areas. Over 200 letters were also received following the workshops. In addition to the resource issues, a number of the publics raised process-related issues concerning overall conduct of the study.

The study process for the completion of the studies was announced in February 1980. The new process reflected public workshop comments, the work of the citizen advisory committee regarding the adequacy of the timber data, and the legal, administrative, and professional study requirements.

This Draft Environmental Statement will also provide an opportunity for additional public involvement regarding management of the Mount Henry, Taylor Hilgard, and West Pioneer Areas. In addition to written and verbal responses to this Draft Environmental Statement, the public will also have the opportunity to express their views regarding these areas at public hearings which have been scheduled during the established review period.

Appendix A

## Participants in the Planning Process

<u>Participant</u>	<u>Job Title or Specialty</u>	<u>Education or Degree(s)</u>	<u>Applicable Work Experi- ence (Years)</u>
<u>Regional Office</u>			
Connie S. Gyles	Statistical Technician	High School Graduate	5
John D. Holden	Social Scientist	Master of Arts	15
Ray D. Hunter	Land Planner	Bachelor of Science	10
Lawrence V. Janes	Cartographics	3 Years Undergraduate Studies	28
James W. Laux	Timber Planner	Bachelor of Science	12
Mark D. McGregor	Entomologist	Master of Science	22
Alan McQuillan	Economist	Doctoral Candidate	5
James P. Merzenich	Economist	Master of Science	2
Robert D. Newman	Mining Engineer	Bachelor of Science	18
Terry L. Raettig	Economist	Master of Science	6
James E. Reid	Director, Planning, Programing, and Budgeting	Master of Science	17
Kristina H. Schwartzman	Writer-Editor	Master's Candidate	3
Victor Standa	Land Uses	Bachelor of Science	7
William J. Weeks	Economist	Ph.D.	15
Deanna B. Williams	Cartographics	High School Graduate	25
<u>Beaverhead National Forest</u>			
Marvin Amundson	Forest Planner	Bachelor of Science	5
Frank Fowler	Planning Staff Officer	Bachelor of Science	11
Henry E. Greittl	Range Conservation	Bachelor of Science	20
Dennis Johnson	District Ranger	Bachelor of Science	2
Vergil Lindsey	District Ranger	Bachelor of Science	12
John Lowell	District Ranger	Bachelor of Science	11
Lawrence Michalsky	Timber Planner	Bachelor of Science	5
Roger J. Poff	Soil Scientist	Bachelor of Science	20
Dave Rittenhouse	District Ranger	Bachelor of Science	1
Arnold G. Royce	Land/Fire Specialist	Bachelor of Science	22
Chuck Sundstrom	Wildlife Biologist	Bachelor of Science	18
Dan Svoboda	Soil Scientist	Bachelor of Science	2
Frank Votapka	Civil Engineer	Master of Science	7
Robert Wagenknecht	Landscape Architect	Bachelor of Landscape Architecture	13
Robert W. Williams	Forest Supervisor	Bachelor of Science	5½
Jerry C. Worley	Silviculturist	Bachelor of Science	22

<u>Participants</u>	<u>Job Title or Speciality</u>	<u>Education or Degree(s)</u>	<u>Applicable Work Experi- ence (Years)</u>
<u>Gallatin National Forest</u>			
Claude A. Coffin	Supervisory Forester	Bachelor of Science	4
Philip C. Cowan	Energy Coordinator	Bachelor of Science	10
Gary J. Dahlgren	Supervisory Forester	Bachelor of Science	1
Carl E. Davis	Soil Scientist	Bachelor of Science	9
James A. Devitt	Social Scientist	Master of Arts	7
John J. Dolan	District Ranger	Master of Science	4
John T. Drake	Forest Supervisor	Master of Science	1 1/2
Randy W. Gay	Timber Planner	Bachelor of Science	5
Stephen P. Glasser	Hydrologist	Master of Science	12
Lewis E. Hawkes	Forest Supervisor	Master of Science	7
Neil J. Howarth	Range Conservationist	Bachelor of Science	8
Terry C. Johnson	Resource Planner	Bachelor of Science	12
Jerome T. Light, Jr.	Wildlife Biologist	Bachelor of Science	15
Ross J. MacPherson	Forester	Bachelor of Science	4
John F. McCulloch	Supervisory Forester	Bachelor of Science	9
Ralph O. Meyer	District Ranger	Bachelor of Science	10
Thomas Puchlerz	Wildlife Biologist	Bachelor of Science	9
John D. Sandmeyer	Land Planner	Bachelor of Science	13
Sherman A. Sollid	Geologist	Master of Science	8
Norman N. Wortman	Fire Management Officer	1 Year Undergraduate Studies	15
<u>Kootenai National Forest</u>			
Alan Christensen	Wildlife Biologist	Master of Science	6
John B. Dillon	Forester	Bachelor of Science	25
David R. Fischer	District Ranger	Bachelor of Science	15
Gary O. Hathaway	Landscape Architect	Master's Candidate	19
Jerry J. Haugen	Transportation Planner	Bachelor of Science	7
David R. Howard	Land Planner	Master of Science	12
Louis J. Kuennen	Soil Scientist	Bachelor of Science	12
Floyd J. Marita	Forest Supervisor	Bachelor of Science	9
		Bachelor of Arts	
Larry Meshew	Hydrologist	Master of Science	5
William E. Morden	Forest Supervisor	Master of Science	3
Tim O'Gorman	Writer-Editor	Master of Arts	2
Jerrold D. Park	Silviculturist	Bachelor of Science	8
Robert Rainville	Fisheries Biologist	Master of Science	6
Lance J. Schelvan	Visual Information Specialist	Bachelor of Science	7
James N. Shadle	Timber Management Planner	Bachelor of Science	7

<u>Participants</u>	<u>Job Title or Speciality</u>	<u>Education or Degree(s)</u>	<u>Applicable Work Experi- ence (Years)</u>
<u>Bureau of Land Management -</u>			
<u>Butte District Office</u>			
John G. Augsburger	Wilderness Specialist	Master of Science	2
Bruce F. Botsford	Outdoor Recreation Planner	Bachelor of Science	13
Harry R. Cosgriffe	Resource Area Manager	Bachelor of Science	4
Dan Lechefsky	Environmental Coordinator	Master's Candidate	1
Jack A. McIntosh	District Manager	Bachelor of Science	16
Richard Ward	Wilderness Specialist	Master's Candidate	2
Tom Whitmer	Range Conservationist	Bachelor of Science	6

Appendix B

DEPARTMENT OF AGRICULTURE  
Office of the Secretary  
Washington, D.C. 20250

Aug. 11, 1977

SUBJECT: Policy for Management of Wilderness within the National  
Forests

TO: Chief, Forest Service

The Department's wilderness management policy is not well understood. Some clarification is offered here, to gain broader awareness and acceptance of that policy. This is not an exhaustive list of practices or uses, but provides a statement of policy for the issues of most concern in managing National Forest wilderness.

The American people will be assured the benefits of an enduring resource of wilderness only if that wilderness resource is managed to protect its unique qualities. Wilderness management, to be effective, must have a basic set of objectives--applied uniformly, with latitude to adapt to the individual requirements of each area--which are understood and accepted both by Forest Service employees and the public.

The Department wilderness management objectives are:

- To maintain an enduring system of high-quality wilderness representative of all National Forest ecotypes;
- To perpetuate the wilderness resource for future generations;
- To the extent that it is consistent with the first two, to provide opportunities for public use, enjoyment, and understanding of wilderness and the unique experiences dependent upon a wilderness setting;
- To maintain plants and animals indigenous to the area by protecting the natural dynamic equilibrium associated with natural, complete ecosystems;
- To accommodate and administer those "nonconforming but accepted" uses provided in the Wilderness Act and subsequent Acts in a way to minimize their impacts;



- To maintain stable watersheds;
- To consider the special protection needs of endangered plant and animal species and their habitats.

Forest Service wilderness management policy must be applied uniformly. Each wilderness, however, requires its own specific direction. This individual need shall be set forth in a management plan for each area. Such plans are to be developed locally with substantial local and regional public participation. The policies and plans shall be applied so that each area retains its wilderness quality; i.e., is managed on a "nondegradation" concept.

Efforts may be made, in modest ways, to improve wilderness quality by restoring natural conditions; practices which would result in the degradation of that quality will not be allowed. There is no place for vista clearing or any other form of "enhancing natural beauty" in wilderness.

Professional skill; knowledge of the Wilderness Act, subsequent-related Acts of Congress, and USDA wilderness policies; good judgment; and public participation are essential components of wilderness management. The local manager should be given some latitude to apply common sense and practical interpretation to national management direction and policy.

#### GENERAL

Within wildernesses there shall be no timber harvesting, no manipulation of vegetation for watershed, wildlife, or forage purposes, and no use of motor vehicles, mechanical transport, motorized equipment, installations, or structures other than as specifically provided for by the Wilderness Act or as stated hereinafter.

#### VISITOR USE FACILITIES

Visitor use facilities are permissible only as needed to protect and manage the wilderness resources, and shall not be provided for the convenience of the visitor. Trails, built and maintained to the standard needed to protect the soil, water, and biological resources, may exist to properly distribute visitors throughout the wilderness. Bridges, made of native materials where possible, may be provided if their absence would subject the visitor to significant hazard or the riparian environment to unacceptable impact. Shelters will not be built, but those in place at the time of designation of the wilderness will be maintained until they need major rehabilitation or their use contributes to unacceptable impacts on soil, water, or biological resources, at which time they will be removed or destroyed. If necessary, to protect soil, water, biological, and wilderness resources, camping

use may be restricted to designated sites; such sites may contain an identification marker and any facility specifically needed to protect the wilderness, such as a fire box in areas of extreme fire hazard. Existing, unsophisticated water sources such as hand pumps may be retained and maintained. Pit or vault toilets serviced by nonmotorized or nonmechanical transport may be emplaced where human waste disposal problems cannot be corrected by dispersal or reasonable limitation of visitor numbers. "Brow logs" may be used to reduce erosion at boat landings. Other facilities such as, but not limited to, boat docks will not be built in wilderness. Such existing facilities will be phased out and removed within ten years of designation of the area as wilderness.

#### COMMERCIAL SERVICES

Commercial services needed for proper use and enjoyment of the wilderness are allowable under special use permits. Certain installations may be allowed for these services. Outfitter camp permits may provide for hitching racks and corrals made of native material. Such facilities should be designed to facilitate seasonal dismantling. The dismantling, however, can be waived provided use is intended during the next snowfree season and continued use of the location will not cause unacceptable impacts on soil, water, and biological resources. If a permittee was authorized to emplace or use tent frames with board flooring, wood siding, or built-in bunks--not generally of a temporary nature nor ordinarily permitted--in the season prior to wilderness designation, he may continue use until the facility needs replacement or major rehabilitation or their continued use would cause unacceptable impacts on soil, water, or biological resources. New installations of this nature will not be authorized in wilderness.

#### EMERGENCIES AND ADMINISTRATION

Emergency use of motorized vehicles and equipment and mechanical transport may be made by the Forest Service for search and rescue, fighting forest fires, or insect and disease epidemics. Nonemergency use should occur only in unquestionable instances of wilderness management need by the Forest Service or cooperating agency. Proposed uses of chemicals for control of outbreaks of insects and diseases must be approved by the Assistant Secretary.

Hydrometeorological devices existing when the area is designated may remain so long as the operating agency agrees to convert to miniaturized equipment, adequately camouflaged, each time a device needs replacement. State game and fish agencies may conduct fish-stocking programs approved by the Forest Service, using aerial drops on those waters where such aerial stocking was in practice prior to wilderness designation. State agencies, reintroducing animals in a project approved by the Forest



Service, may use mechanical transport, including helicopter, only upon a determination by the Assistant Secretary that the reintroduction is desirable and that no practical alternative mode of transportation exists.

#### NONCONFORMING, BUT ACCEPTED, USES

The Wilderness Act provides that certain uses, generally considered as "nonconforming" to wilderness environments, may continue in wildernesses. Where grazing had been established before designation and is continuing, installations and improvements for grazing are permissible only as needed to protect wilderness resources--including soil, water, and biological resources. Where the use of aircraft and motorboats had become established prior to designation as wilderness, their continued use may be permitted at locations, times, and in such manner as is provided in the management plan for that wilderness, so long as that plan concludes that such continued use is necessary and proper for use of the wilderness. Hunting and fishing shall be in accordance with applicable State and Federal laws and regulations. There may be wilderness locations so popular with nonhunters during the hunting season that hunting closures by the State agency should be negotiated for limited areas less popular with hunters in order to provide autumn wilderness experiences for both hunters and nonhunters.

The establishment of new water projects or parts of projects may be permitted only upon specific authorization of the President. Existing water developments will either be made as esthetically compatible as possible with the wilderness environment or removed. Maintenance of such existing developments will be by primitive tools unless case-by-case authorization is granted by the Regional Office for motorized maintenance methods.

#### PHILOSOPHICAL BASIS OF WILDERNESS POLICY

As writer Michael Frome notes in Whose Woods These Are: The Story of the National Forest, "the modern concept of wilderness was born and reached fruition in the Forest Service." Aldo Leopold, who won creation of the Gila Wilderness in 1924, the Nation's first, stated that "the administration of the National Forests of America has for its real purpose the perpetuation of life--human, plant, and animal life."

Leopold is credited with considering the predicted timber famine "a matter of quality rather than quantity," and suggested that "the emphasis on logging under intensive forestry be limited to richer, accessible forest regions, capable of producing high-quality timber, while dedicating remaining regions to various forms of recreation, game management, and wilderness."

While Leopold introduced the wilderness idea and was responsible for establishing the first area in New Mexico, Robert Marshall brought the concept to maturity during his career as Director of Recreation

in the Forest Service. Marshall developed the administrative regulations under which the Forest Service proceeded, on its own, to protect over 14 million acres of National Forest land as "wilderness," "wild," or "primitive" areas, prior to congressional passage of the Wilderness Act of 1964.

The Forest Service should be proud of its leading role in wilderness administration. Forest officers engaged in wilderness administration today should be guided by their predecessors' wise counsel:

Leopold: "Recreation is valuable in proportion to the intensity of its experiences, and to the degree to which it differs from and contrasts with workaday life. By these criteria, mechanized outings are at best a milk-and-water affair. Recreation is not their only, or even their principal, utility. Ability to see the cultural value of wilderness boils down, in the last analysis, to a question of intellectual humility. Raw wilderness gives definition and meaning to the human enterprise."

Marshall: "The National Forest System is uniquely fit to provide two distinct vacation environments: One, the comfortable and modern; two, the peaceful timelessness where vast forests germinate and flourish and die and rot and grow again without relationship to the ambitions and interferences of man."

These observations are as valid today as when they were made, and the value of wilderness will increase as our society becomes more dependent upon complex technology.

Let's continue our record of excellence in wilderness administration through uniform application of these policy guidelines.

/S/ M. RUPERT CUTLER  
Assistant Secretary for Conservation,  
Research, and Education



Appendix C 55/*Grazing in National Forest Wilderness Areas*

Section 4(d)(4)(2) of the Wilderness Act states: "the grazing of livestock, where established prior to the effective date of this Act, shall be permitted to continue subject to such reasonable regulations as are deemed necessary by the Secretary of Agriculture."

The legislative history of this language is very clear in its intent that livestock grazing, and activities and the necessary facilities to support a livestock grazing program, will be permitted to continue in National Forest wilderness areas, when such grazing was established prior to classification of an area as wilderness.

Including those areas established in the Wilderness Act of 1964, Congress has designated some 188 areas, covering lands administered by the Forest Service, Fish and Wildlife Service, National Park Service and Bureau of Land Management as components of the National Wilderness Preservation System. A number of these areas contain active grazing programs, which are conducted pursuant to existing authorities. In all such cases, when enacting legislation classifying an area as wilderness, it has been the intent of the Congress, based on solid evidence developed by testimony at public hearings, that the practical language of the Wilderness Act would apply to grazing within wilderness areas administered by all Federal agencies, not just the Forest Service. In fact, special language appears in all wilderness legislation, the intent of which is to assure that the applicable provisions of the Wilderness Act, including Section 4(d)(4)(2), will apply to all wilderness areas, regardless of agency jurisdiction.

Further, during the 95th Congress, Congressional committees became increasingly disturbed that, despite the language of section 4(d)(4)(2) of the Wilderness Act and despite a history of nearly 15 years in addressing and providing guidance to the wilderness management agencies for development of wilderness management policies, National Forest administrative regulations and policies were acting to discourage grazing in wilderness, or unduly restricting on-the-ground activities necessary for proper grazing management. To address this problem, two House Committee on Interior and Insular Affairs Reports (95-620 and 95-1321) specifically provided guidance as to how section 4(d)(4)(2) of the Wilderness Act should be interpreted. This guidance appeared in these reports as follows:

Section 4(d)(4)(2) of the Wilderness Act states that grazing in wilderness areas, if established prior to designation of the area as wilderness, "shall be permitted to continue subject to such reasonable regulations as are deemed necessary by the Secretary of Agriculture". To clarify any lingering doubts, the committee wishes to stress that this language means that there shall be no curtailment of grazing permits or privileges in an area simply because it is designated as wilderness. As stated in the Forest Service regulations (36 CFR 293.7), grazing in wilderness areas ordinarily will be controlled under the general regulations governing grazing of livestock on National Forests \* \* \*. This includes the establishment of normal range allotments and allotment management plans. Furthermore, wilderness designation should not prevent the maintenance of existing fences or other live-



stock management improvements, nor the construction and maintenance of new fences or improvements which are consistent with allotment management plans and/or which are necessary for the protection of the range.

Despite the language of these two reports, RARE II hearings and field inspection trips in the 96th Congress have revealed that National Forest administrative policies on grazing in wilderness are subject to varying interpretations in the field, and are fraught with pronouncements that simply are not in accordance with section 4(d)(4)(2) of the Wilderness Act. This had led to demands on the part of grazing permittees that section 4(d)(4)(2) of the Wilderness Act be amended to clarify the intentions of Congress. However, because of the great diversity of conditions under which grazing uses (including different classes of livestock) are managed on the public lands, the Conferees feel that the original broad language of the Wilderness Act is best left unchanged. Any attempts to draft specific statutory language covering grazing in the entire wilderness system (presently administered by four separate agencies in two different Departments) might prove to be unduly rigid in a specific area, and deprive the land management agencies of flexible opportunities to manage grazing in a creative and realistic site specific fashion.

Therefore, the conferees declined to amend section 4(d)(4)(2) of the Wilderness Act, agreeing instead to reaffirm the existing language and to include the following nationwide guidelines and specific statements of legislative policy. It is the intention of the conferees that the guidelines and policies be considered in the overall context of the purposes and direction of the Wilderness Act of 1964 and this Act, and that they be promptly, fully, and diligently implemented and made available to Forest Service personnel at all levels and to all holders of permits for grazing in National Forest Wilderness areas:

1. There shall be no curtailments of grazing in wilderness areas simply because an area is, or has been designated as wilderness, nor should wilderness designations be used as an excuse by administrators to slowly "phase out" grazing. Any adjustments in the numbers of livestock permitted to graze in wilderness areas should be made as a result of revisions in the normal grazing and land management planning and policy setting process, giving consideration to legal mandates, range condition, and the protection of the range resource from deterioration.

It is anticipated that the numbers of livestock permitted to graze in wilderness would remain at the approximate levels existing at the time an area enters the wilderness system. If land management plans reveal conclusively that increased livestock numbers or animal unit months (AUMs) could be made available with no adverse impact on wilderness values such as plant communities, primitive recreation, and wildlife populations or habitat, some increases in AUMs may be permissible. This is not to imply, however, that wilderness lends itself to AUM or livestock increases and construction of substantial new facilities that might be appropriate for intensive grazing management in non-wilderness areas.

2. The maintenance of supporting facilities, existing in an area prior to its classification as wilderness (including fences, line cabins, water

wells and lines, stock tanks, etc.), is permissible in wilderness. Where practical alternatives do not exist, maintenance or other activities may be accomplished through the occasional use of motorized equipment. This may include, for example, the use of backhoes to maintain stock ponds, pickup trucks for major fence repairs, or specialized equipment to repair stock watering facilities. Such occasional use of motorized equipment should be expressly authorized in the grazing permits for the area involved. The use of motorized equipment should be based on a rule of practical necessity and reasonableness. For example, motorized equipment need not be allowed for the placement of small quantities of salt or other activities where such activities can reasonably and practically be accomplished on horseback or foot. On the other hand, it may be appropriate to permit the occasional use of motorized equipment to haul large quantities of salt to distribution points. Moreover, under the rule of reasonableness, occasional use of motorized equipment should be permitted where practical alternatives are not available and such use would not have a significant adverse impact on the natural environment. Such motorized equipment uses will normally only be permitted to those portions of a wilderness area where they had occurred prior to the area's designation as wilderness or are established by prior agreement.

3. The replacement or reconstruction of deteriorated facilities or improvements should not be required to be accomplished using "natural materials", unless the material and labor costs of using natural materials are such that their use would not impose unreasonable additional costs on grazing permittees.

4. The construction of new improvements or replacement of deteriorated facilities in wilderness is permissible if in accordance with those guidelines and management plans governing the area involved. However, the construction of new improvements should be primarily for the purpose of resource protection and the more effective management of these resources rather than to accommodate increased numbers of livestock.

5. The use of motorized equipment for emergency purposes such as rescuing sick animals or the placement of feed in emergency situations is also permissible. This privilege is to be exercised only in true emergencies, and should not be abused by permittees.

In summary, subject to the conditions and policies outlined above, the general rule of thumb on grazing management in wilderness should be that activities or facilities established prior to the date of an area's designation as wilderness should be allowed to remain in place and may be replaced when necessary for the permittee to properly administer the grazing program. Thus, if livestock grazing activities and facilities were established in an area at the time Congress determined that the area was suitable for wilderness and placed the specific area in the wilderness system, they should be allowed to continue. With respect to areas designated as wilderness prior to the date of this Act, these guidelines shall not be considered as a direction to re-establish uses where such uses have been discontinued.

Appendix D

Sources for Publications Cited

Many of the documents used in preparation of this Draft Environmental Impact Statement are Forest Service Regional or Forest reports, plans, and publications on file in Regional or Forest offices. Information about these sources may be obtained by contacting:

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APPENDIX E

Glossary

The definitions used here are intended to aid the reader in understanding the text and are not intended to approximate legal definitions.

Animal Unit Month (AUM)	A unit of grazing capacity; the amount of forage normally required per month for one mature cow or five adult sheep. Reported figures exclude big game and wild horses.
Board Foot (BM) Measure	The amount of wood contained in an unfinished board 1" x 12" x 12" (Scribner rule).
Commercial Forest Land	Forest land which is producing or capable of producing crops of marketable wood. Areas suitable for management to grow crops of industrial wood are included. Site quality is capable of producing in excess of 20 cubic feet per acre of annual growth.
Commodity	A transportable resource product with commercial value.
Cultural Resource	Potential knowledge about human cultural systems, in the form of historic and prehistoric products and byproducts of man which are important in making land management decisions.
Deferred	Commercial forest land removed from production pending final classification, i.e., wilderness study areas.
Developed Site	A recreation area with facilities constructed for visitor use.
Dispersed Recreation	Scattered, individual outdoor recreation activities normally not identified with developed facilities or areas of group concentration. Includes such activities as hiking, backpacking, hunting, fishing, horseback riding, and cross-country skiing.

Economic Analysis Unit (EAU)	An area containing harvestable timber which can be accessed with one unified road system.
Habitat Type	An aggregation of all land areas potentially capable of producing similar plant communities at climax.
Inferred Submarginal Mineral Resources	Resources for which quantitative estimates are based largely on broad knowledge of the geologic character of the deposit and for which there are few, if any, samples or measurements. Submarginal refers to that portion of subeconomic resources which would require a substantially higher price (more than 1.5 times the price at the time of determination) or a major cost-reducing advance in technology.
Land Expectation Value (LEV)	The present value of a perpetual series of rotations beginning with bare (i.e., nonforested) land. Also called "bare land value."
M	Thousand ) MMBF, MMBM, MAUM, MRVD, or ) 12MM
MM	Million )
Marginal Component	Regulated commercial forest land including areas not qualifying as standard or special components primarily because of excessive development cost, low product values, or resource protection constraints.
Off-Road Vehicle (ORV)	Any motorized vehicle generally designed or used for travel off roadways or trails, such as four-wheel-drive vehicles, motorcycles and scooters, all terrain vehicles and snowmobiles.
Output	Any result, product, or service that a process or activity actually produces.



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Photo Interpretation (PI) Type	The delineation from aerial photographs of forest vegetation into groups with like characteristics differentiated by height, density, management activities of man and natural phenomenon.
Potential Yield	The maximum sustained harvest possible under a specified management intensity level recognizing reductions for the constraints of key resources other than timber.
Present Net Worth	A widely accepted investment criterion used to calculate the economic efficiency of alternative courses of action. Using an interest rate, all future benefits and costs are discounted to the present so that they are comparable. The present net worth reflects the productivity of contemplated action relative to economy-wide productivity through the interest rate used in the analysis.
Programed Harvest	That part of the potential yield that is planned for harvest in any one year according to the most recent Timber Management Plan.
Recreation Visitor Day (RVD)	Equivalent to a person spending 12 hours in recreation on public land.
Regulated	Commercial forest land and its inventory that can contribute to systematic timber production under sustained yield principles.
Reserved	Commercial forest land removed from production by legislative or administrative action, i.e., wilderness.
Suitability for Timber Production	Commercial forest land where the biological growth potential for the land is equal to or exceeds the minimum standard for timber production of 20 cubic feet per acre per year; where technology is available that will insure timber production without irreversible resource damage to soils, productivity, or watershed conditions; and where there is reasonable assurance that such lands can be adequately restocked.

Undiscovered Mineral Resources	Unspecified bodies of mineral-bearing material surmised to exist on the basis of broad geologic knowledge and theory.
Wilderness	<p>An area designated by Congress under the provisions of the Wilderness Act of September 3, 1964. To qualify for classification under the Wilderness Act, the area must exhibit the following characteristics:</p> <ul style="list-style-type: none"><li>-- Be an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvement or human habitation.</li><li>-- Generally appear to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable.</li><li>-- Have outstanding opportunities for solitude or a primitive and unconfined type of recreation.</li><li>-- Have at least 5,000 acres of land or be of sufficient size to make practicable its preservation and use in an unimpaired condition.</li><li>-- May also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.</li></ul>
Wilderness Attribute	One of the four attributes required or mentioned in the Wilderness Act (Natural Integrity, Apparent Naturalness, Outstanding Opportunities for Solitude, and Opportunities for Primitive Recreation). Supplemental attributes are outstanding ecological, geological, scenic, and historical features.
Withdrawal	Certain lands administered by the Forest Service removed from appropriation and entry and set aside for other public purposes under the provisions of several acts of the Congress (Includes reclamation, power sites, military uses, etc.).

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