FOREST PLAN

FLATHEAD NATIONAL FOREST

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SUPERVISOR'S MESSAGE

I am pleased to transmit the Flathead's first Forest-wide Land and Resource Management Plan. This comprehensive document provides management direction for the next 10-15 years.

It reflects 5 years of intensive effort by hundreds of Forest Service employees and thousands of citizens. The Plan is a better document because of this extensive involvement by such a wide array of citizens.

Basic Plan development was guided by the following National policy:

> "It is the policy of the United States, that the Nation's forested land, except such public land that is determined by law or policy to be maintained in its existing or natural state, should be managed at levels that realize its capabilities to satisfy the Nation's need for food, fiber, energy, water, soil stability, wildlife and fish, recreation, and esthetic values..."

Inherent in this National policy is the need for long-term land stewardship: to demonstrate leadership in Forest land conservation, provide public service, and provide "the greatest good to the greatest number in the long run".

/s/ *Ed Brannon*

EDGAR B. BRANNON, JR.
Forest Supervisor

PREFACE

The Flathead National Forest Land and Resource Management Plan (Forest Plan) provides integrated management direction for each resource on the Forest. The Proposed Action in the Plan is based on the analysis and selection of an alternative described in the accompanying EIS (Environmental Impact Statement) as the Preferred Alternative.

The Forest Plan is in compliance with NFMA (the National Forest Management Act of 1976); the regulations for National Forest Land and Resource Management Planning (36 CFR Part 219); and NEPA (the National Environmental Policy Act of 1969), including the Record of Decision for the Environmental Impact Statement covering the Forest Plan.

August, 2001: This version of the Forest Plan was prepared to incorporate all amendments up to this date. Superceded text in the original Forest Plan has been eliminated.

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I. Introduction

PURPOSE

The Forest Plan guides all natural resource management activities and establishes management standards for the Flathead National Forest. It describes resource management practices, levels of resource production and management, and the availability and suitability of lands for resource management.

The purpose of the Forest Plan is to provide long-term direction for managing the Flathead National Forest. This Plan will be revised every 10-15 years, with interim amendments as needed.

As displayed in this document, the Forest Plan provides two levels of direction: general Forest-wide management direction and specific direction for each management area. Direction is described in terms of management goals, objectives, and Forest-wide and Management Area Standards. The Forest Plan also specifies monitoring and evaluation.

The Forest Plan is structured as follows:

Chapter I provides an introduction to the Forest planning process.

Chapter II contains the Forest-wide multiple- use goals, objectives, and standards that apply to the Flathead National Forest.

Chapter III provides a description of each Management Area and the direction for management. Chapter III also presents the monitoring and evaluation requirements for each management area. Forest-wide monitoring and evaluation requirements (Chapter V) will be implemented to indicate how well planning assumptions, goals and objectives are being met as well as what the environmental effects of implementation actually are.

Chapter IV contains a discussion of the Geographic Units. Each of these units is mapped and physical, biological, and social characteristics of the area are briefly discussed. In addition, expected management activities are displayed.

Chapter V outlines implementation of the Forest Plan. This chapter focuses on implementation problems, provides guidance for using this document in project planning, and outlines implementation of the Forest Plan Monitoring Requirements.

Chapter VI presents a summary of the "Analysis of the Management Situation." Included in this chapter are:

-- an assessment of the current Forest program,

-- an assessments of the Forest's potential to produce different amounts of goods and services,

-- an evaluation of public "demand" for Forest resources, and

-- identification of opportunities and need for change of current management.

This chapter also compares the Forest Plan to current management direction and to the supply potentials of the Forest.

Chapter VII is a glossary.

The appendices contain management direction and other material necessary to understand and use the Forest Plan.

Additional information is incorporated by references. Most of this information is available through the Flathead National Forest Planning Records. There records are available for review at the Flathead National Forest Supervisor's Office, Kalispell, Montana.

MANAGEMENT DIRECTION

The goals, objectives, standards, schedule of management practices, and monitoring and evaluation requirements comprise the Plan's management direction; however, the projected outputs, services, and rates of implementation are dependent on the annual budget.

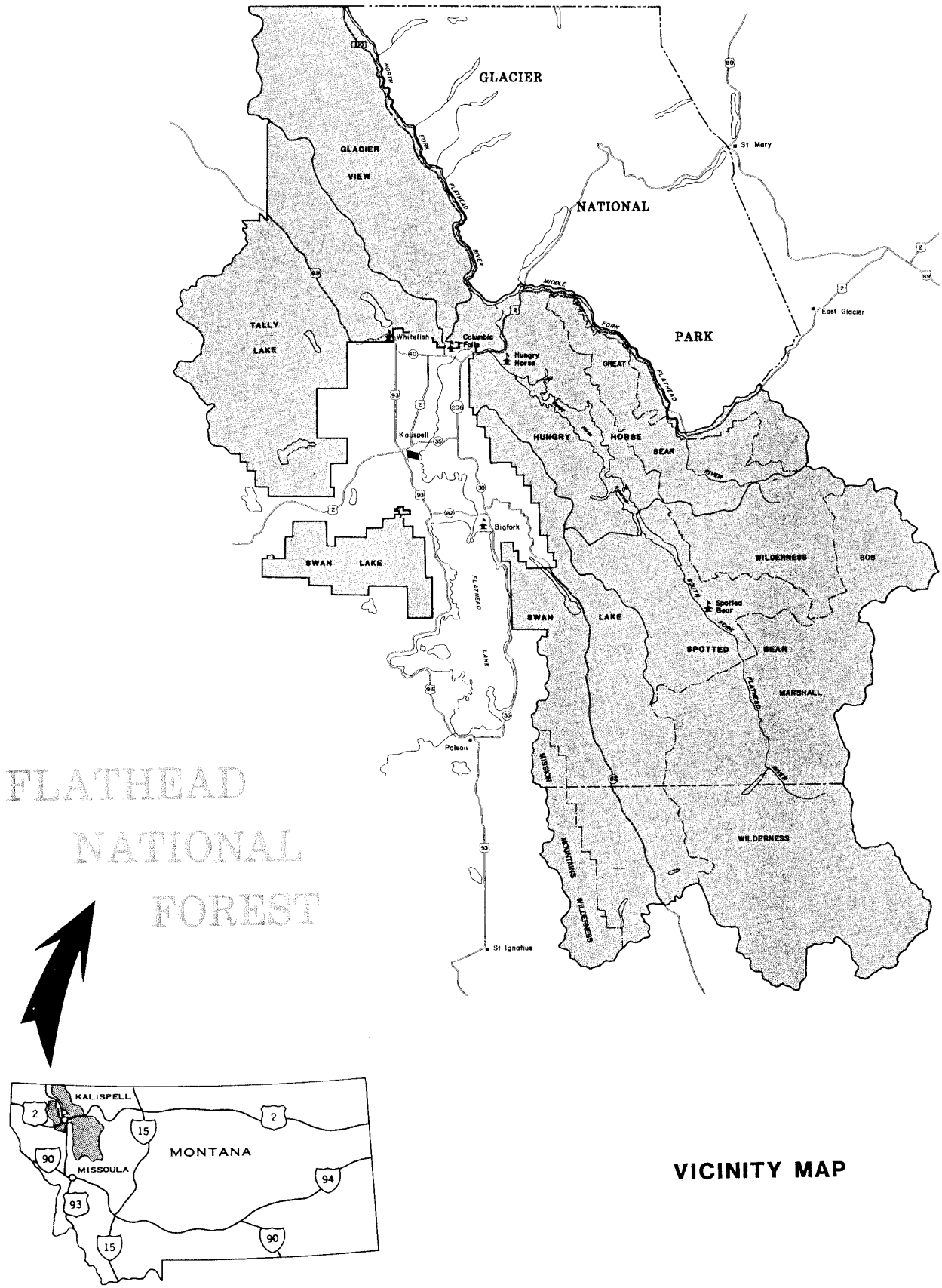
RELATIONSHIP TO OTHER DOCUMENTS

A. ENVIRONMENTAL IMPACT STATEMENT -

The Forest Plan is based on the various considerations which have been addressed in the accompanying EIS (Environmental Impact Statement), and represents the Preferred Alternative in the EIS. The planning process and the analysis procedure used in developing this Plan, as well as the other alternatives that were considered, are described or referenced in the EIS. Project level activities will be planned and implemented to carry out the management direction in this Plan. The NEPA (National Environmental Policy Act) requirements will be followed as the site specific issues and impacts are addressed during project development.

B. REGIONAL GUIDE -

The Regional Guide (issued June 10, 1983, by the Regional Forester) displays the Northern Region's portion of the RPA (Rangeland Renewable Resources Planning Act) Program among the National Forests, provides direction for National Forest plans, and develops standards and guidelines for addressing major issues and management concerns which need to be considered at the Regional level to facilitate Forest planning. The Regional Guide process allows for discussion and analysis of National Forest program capabilities to determine opportunities to meet short- and long-term natural resource demands.



VICINITY MAP

II. Forest-wide Management Direction

GOALS

Through this Forest Plan, the Flathead National Forest will be managed to achieve certain long-term goals. All management direction and Forest objectives must support and contribute to the eventual realization of these goals.

A. MANAGEMENT PHILOSOPHY

The word conservation was a term that Gifford Pinchot brought into everyday usage. As first Chief of the Forest Service, and America's leading advocate of environmental conservation for over fifty years, Pinchot defined conservation as "the foresighted utilization, preservation, and/or renewal of forests, waters, lands, and minerals, for the greatest good of the greatest number for the longest time."

The purpose of conservation is to make this land the best possible place to live, both for us and our descendents, and to do so in such a way as not to impair or degrade those very resources from which our sustenance and quality of life is derived.

Within the scope of the Forest Service mission, as defined by the legislative record and administrative regulations, the goals of this Forest Plan are to realize and carry forward these principles of conservation and our commitment to what Pinchot termed "the public interest". The Forest Plan goals, as outlined below, have their origins in the early forestry and conservation movement. Their underlying principles are as valid today, as when Pinchot formulated his definition of conservation 80 years ago. These goals provide current and future land managers with guidance and direction that is consistent through time. How they are realized by this generation is our challenge, our obligation, our legacy.

1. PROVIDE FOR PUBLIC BENEFITS FROM NATIONAL FOREST LANDS

The goal of providing public benefits from the management of natural resources is closely linked to the concepts of utilization and preservation. Utilization being the planned allocation, development, and efficient distribution of selected natural resources. Preservation being the safekeeping and protection of selected landscapes and their associated communities of plants and animals.

Utilization recognizes the right of the present generation to develop and use resources to provide for a prosperous, happy, and secure national life. Conservation is not the denial of access to all our natural resources, but rather their foresighted and planned utilization. Planned development stands for the prevention of waste and the unnecessary exploitation of resources. Although planned development recognizes the right of the present generation to prudently use what it needs, it also recognizes equally our obligation to insure that our current need does not deprive our descendents of the resources they will require.

Associated with resource development and use are physical and visual changes in the Forest environment. These planned changes or modifications are described in this Forest Plan, and their results will be measured and monitored during the Plan period. Public participation in the planning

process was instrumental in determining what levels of change and modification are appropriate, and what the overall direction of Forest management should be.

Not all public benefits derived from the Forest will visually affect or modify the land, in fact those that do represent only a small portion of the total Forest. Benefits from the Forest represent long-term resource values that are expressed and measured in both priced and non-priced terms. Utilization and development lend themselves to the quantitative. Preservation, protection, or appreciation of the natural world tend to be qualitative. Balanced resource management is both, thus the benefits derived, whether priced or non-priced, are consistent with Forest Service mandates and the principles of conservation.

2. LONG TERM STEWARDSHIP OF THE LAND

Public benefits from natural resource management are only possible if the basic land resources of soil and water are sustained through time. To realize this goal, our attention must be focused both on the present and the future.

Commitment to long-term stewardship is demonstrated by strong and visible sensitivity to the land in our on-the-ground management activities. Management activities that are sensitive to the land are in harmony with nature and provide for and maintain a healthy environment.

The overriding indicators that reflect the quality of the Forest environment and the long-term productivity of these lands are soil and water. Foremost consideration must be given to these resources when considering social needs and public benefits.

History has shown us that public and social needs change over time, and that these needs may not always be compatible with good land stewardship. These situations require land managers to make decisions that interpret present versus future needs.

When considering the goal of long-term stewardship, we must recognize the fact that man's ability to predict and control his physical environment is limited. Natural processes are continually at work that change and modify vegetative patterns and landforms. For the most part these changes occur relatively slowly when measured in terms of years or decades; however, the potential for sudden and dramatic change is always present. Natural catastrophic events do occur and will continue to occur. The impacts of these events on our efforts at proper land stewardship can be far reaching. In some situations, effective management measures can be implemented to mitigate the dangerous or undesirable effects of these occurrences, but in other circumstances these events will continue uninfluenced by the desires of resource managers.

Another dimension of catastrophic impacts on the natural environment are those induced or precipitated by the actions of man. There is no question that man-caused disasters or environmental abuses have left their ugly and deleterious imprints on the land. The goal of long-term stewardship demands that any human activities that degrade or impair soil and water resources be eliminated or controlled.

3. LEADERSHIP IN FORESTRY

The first scientifically trained foresters in America came from Europe. They brought with them a strong conservation ethic and practical experience in forest management. Through their efforts scientific forestry in America had its modest beginning. Forestry schools were established, and professionally trained graduates joined the ranks of lumbermen, developing state forestry organizations and the newly formed Forest Service. Through these federal foresters the principles of scientific forest management were applied to the diverse and expansive landscapes comprising the National Forest System.

Application of forest management on these lands required the coordination, commitment and technical competence of many diverse disciplines. Through these combined efforts, professional leadership in forest management became an ideal, or goal, that continues to motivate and inspire professional excellence from the many disciplines that comprise the practice of modern forestry.

Modern forestry is truly an interdisciplinary task. This integration of technical skills and scientific knowledge brings with it professional ethics and conduct that are in some ways unique or exceptional to each discipline.

How successfully these disciplines are merged together, and yet still effectively contribute their own individual qualities and expertise, is dependent upon a unifying commitment to long-term stewardship.

Leadership in forestry is application of science and technology to solve problems of human need, and environmental degradation. Leadership in forestry is a commitment to the principles of conservation. It can only be achieved when those diverse parts of the social, physical, and biological sciences can be collectively marshaled to meet the needs of both the human and forest communities.

4. COMMITMENT TO PUBLIC SERVICE

The preceding goals all contain strong elements of Forest Service commitment to public service. Efforts by this agency and this Forest, to make these goals a reality is a sincere expression of our commitment to manage public lands for the benefit of the American people in a manner that is compatible with long-term environmental quality.

Commitment to the ideal of public service is a value deeply ingrained in Forest Service tradition. Early in this century when Gifford Pinchot and Theodore Roosevelt established the Forest Service they recognized the close association between what they termed the "public interest" and the concept of clean and efficient public service. These values, directly traceable to the social and moral attitudes held by Pinchot and Roosevelt, became federal policy and administrative direction for the early Forest Service. This deep sense of social responsibility and service to the public was shared by many of their associates, and was instilled in and subscribed to by succeeding generations of Forest Service employees.

Today this commitment to public service is still a value strongly held and cherished by most Forest Service personnel. This commitment to public service, however, has become increasingly questioned and challenged by members of the public and representatives of the special interest groups. These challenges have become most vociferous when Forest Service actions or proposals

have, or are perceived to have, an adverse impact on a particular resource or value held by these individuals or groups.

As evidenced by the recent volume of public comment to this Plan, there exists a wide range of opinion as to how these National Forest System Lands should be managed and for what purposes. Clearly there is no public consensus on what proposed direction represents a balanced approach to Forest management.

In recent years many Forest Service employees have found it increasingly difficult to determine if their own professional actions or agency policies are in concert with public desires and resource needs. Controversy and bitterly divided public opinion has created a situation where agency activities are viewed, by what seems to be an ever increasing array of special interest groups, as inadequate, inappropriate, or even detrimental to the very resources we are responsible to manage. This assault has raised doubts, both within the agency and externally, concerning Forest Service responsiveness to public input and even responsible resource management.

None of this should be surprising or disappointing. National Forest management was born of controversy and conflict and will continue to be the focus of intense public and private scrutiny. It's our feeling that this close involvement by the public is fair and proper. The "public interest" has been, and will continue to be, best served by active and informed public participation.

Recognition of Forest Service commitment to professional and conscientious public service is rarely bestowed upon the agency by those who feel their interests are being adversely affected by our actions. Gratification and reward for a job well done, pride in technical and professional competence, and the feeling of self worth associated with commitment to ideals, principles and goals must come from within. These attributes can be fostered and encouraged by peers and colleagues. They are occasionally applauded by the public, but always it is dependent upon us as individuals to discover, share, and perpetuate that commitment.

B. RESOURCE GOALS

In light of the Forest Service policy on multiple-use management, the Flathead National Forest will attempt to strike a balance among resources to achieve the following goals:

1. THREATENED AND ENDANGERED SPECIES

Provide sufficient habitat to promote the recovery of threatened and endangered species and conserve the ecosystems upon which they depend. Federally listed species that occur on the Flathead National Forest are grizzly bear, gray wolf, bald eagle, peregrine falcon, water howellia, and bull trout.

2. WATER QUALITY AND FISHERIES

Maintain high quality water, which meets or exceeds State and Federal water quality standards to protect migratory and resident fisheries, water-based recreation opportunities, and public water supplies.

3. TIMBER

Provide a predictable and sustainable supply of timber products that is responsive to local industry and economies, consistent with other Forest management goals, objectives and standards.

4. BIG GAME

Provide appropriate habitat and access to maintain desired hunting, fishing, and viewing opportunities, in coordination with the Montana Dept. of Fish, Wildlife and Parks.

5. ROAD MANAGEMENT

Develop and implement a road management program, with road use restrictions and closures, that is responsive to resource protection needs and public concerns.

6. WILDERNESS

Intensify management of the Forest's three Wildernesses and the Flathead Wild and Scenic River System to ensure resource protection while providing quality recreation opportunities.

7. MINERALS

Facilitate exploration for, and the orderly and efficient development of, minerals and energy resources, recognizing the need for balanced multiple-use management.

8. RECREATION

Provide a range of quality outdoor recreation opportunities within a forest environment that can be developed for visitor use and satisfaction.

Provide a range of quality recreation opportunities, including motorized and nonmotorized, in an undeveloped forest environment.

9. VIABILITY OF NATIVE SPECIES

Ensure that Forest Service actions do not contribute to the loss of viability of native species.

10. OLD GROWTH FORESTS

Maintain and recruit old growth forests to an amount and distribution that is within the 75% range around the median of the historical range of variability. Where current conditions are below this amount, actively manage to recruit additional old growth.

11. LANDSCAPE PATTERNS AND PROCESSES

Improve local knowledge of native succession and disturbance regimes, and resulting landscape dynamics. Apply this knowledge in developing desired future landscape patterns and ecological processes for individual landscapes and watersheds.

INFISH - Riparian Goals are to maintain or restore:

(1) water quality, to a degree that provides for stable and productive riparian and aquatic ecosystems;
(2) stream channel integrity, channel processes, and the sediment regime (including the elements of timing, volume, and character of sediment input and transport) under which the riparian and aquatic ecosystems developed;
(3) instream flows to support healthy riparian and aquatic habitats, the stability and effective function of stream channels, and the ability to route flood discharges;
(4) natural timing and variability of the water table elevation in meadows and wetlands;
(5) diversity and productivity of native and desired non-native plant communities in riparian zones;

(6) riparian vegetation, to:
  (a) provide an amount and distribution of large woody debris characteristic of natural aquatic and riparian ecosystems;
  (b) provide adequate summer and winter thermal regulation within the riparian and aquatic zones; and
  (c) help achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed.
(7) riparian and aquatic habitats necessary to foster the unique genetic fish stocks that evolved within the specific geo-climatic region; and
(8) habitat to support populations of well-distributed native and desired non-native plant, vertebrate, and invertebrate populations that contribute to the viability of riparian-dependent communities.

OBJECTIVES

Forest objectives are concise, time-specific statements of measurable planned results intended to respond to the Forest goals. Specific activities to accomplish these objectives are listed in Appendix M. A further understanding of the management direction can be attained by also reading the Forest-wide goals and standards in this chapter along with the management area goals and standards in Chapter III. The Flathead National Forest objectives are as follows:

A. RESOURCE MANAGEMENT OBJECTIVES

1. RECREATION

a. Developed Recreation - Bring all developed sites up to full-service level by 1995.

b. Trails - Provide a system of trails in a variety of settings. Construct or reconstruct about 50 miles by 1995.

c. Wild and Scenic Rivers - Implement visitor management for the Wild and Scenic River System on the Flathead National Forest during 1986. (See Management Area 18 standards.)

2. VISUAL QUALITY

a. Rehabilitation - Using appropriate landscape management tools, study and implement, if possible the rehabilitation of three areas in the Noisy Face Geographic Unit not currently meeting visual

quality objectives. These areas are as follows: (1) Peterson/Patterson Creek, (2) Mill Creek, and (3) Trail Creek.

b. Enhancement - During the first decade, implement projects proposed by the Plan for the west side of Hungry Horse Reservoir road (see Appendix M). Complete approximately 1,875 acres of this vegetative management by the year 1995 to enhance the recreation and visual experience.

By 1995 update the landscape management procedures for the Swan Highway and implement projects to enhance the viewing and recreation experience along the highway.

3. WILDERNESS

Receive approval on the standards developed through the Limits of Acceptable Change process in the Bob Marshall, Great Bear, and Scapegoat wildernesses during 1986. Begin implementation by 1987.

4. WILDLIFE AND FISH

a. Grizzly Bear

(1) The Flathead National Forest lies within the Northern Continental Divide recovery area. Within each Bear Management Unit, ensure occupancy by reproducing females and limit mortality to achieve recovery goals in the Recovery Plan.

(2) Lands within the recovery zone are to be designated as Management Situation 1, 2, or 3 as defined in the Interagency Grizzly Bear Guidelines (Forest Plan Unbound Appendix OO). Management Situations are shown on page II-24. Objectives for Management Situation 1 are to provide high-quality habitat for seasonal foraging needs, free-ranging movement and dispersal of resident grizzly bears, and low risk of mortality due to human/bear conflicts. Objectives for MS-2 are to provide adequate habitat conditions for short-term occupancy, movement and dispersal, and low risk of mortality due to human/bear conflicts. Objectives for MS-3 are to discourage occupancy by grizzly bears and to minimize risk of human/bear conflicts.

(3) Habitat conditions adequate to provide for a successfully reproducing adult female will be provided in all BMU Subunits.

(4) In BMU Subunits that are predominantly National Forest (jurisdiction greater than 75%), the following desired levels will be attained within 10 years*

(a) security core areas are 68 to 100 percent;

(b) total motorized access is less than 19% of the MS-1 and MS-2 with density greater than 2 miles/square mile;

Within 5 years the following will be attained*

(a) BMU Subunits having less than the current Forest average of 60% security core area will provide at least 60%;

(b) BMU Subunits having total motorized access exceeding the current Forest average of 24% with density >2 miles/ square mile will be brought to no more than 24% in MS-1 and MS-2; and

(c) open motorized access is less than 19% of the MS-1 and MS-2 with density greater than >1 mile/ square mile.

(5) Within BMU Subunits with an intermingled ownership pattern and/or are not predominantly National Forest, Forest Service activities will not result in an increase in motorized access

density or a reduction in core areas on National Forest System lands. Efforts will be made to improve habitat effectiveness of BMU Subunit through cooperative management, land adjustments, or other means.

(6) Establish an active public information and education program that explains goals and objectives of grizzly bear management and steps required to recover the population.

b. Bald Eagle - In coordination with other agencies and affected landowners, develop and update periodically a Bald Eagle Nest Management Plan to provide guidance for management of each known territory.

c. Peregrine Falcon - In coordination with other agencies and affected landowners, develop and update periodically a Peregrine Falcon Nest Management Plan to provide guidance for management of each known territory.

d. Big Game Species - Provide sufficient habitat to contribute to meeting objectives of Montana Dept. of Fish, Wildlife and Parks management plans.

e. Sensitive Species - In cooperation with federal, state and private organizations, conduct inventories of sensitive species and develop Species Conservation Strategies.

f. Species Associated with Dead and Defective Tree Habitat - Maintain appropriate tree species composition, size, and density of dead and defective trees and down logs. See Vegetation Standard H(7).

g. Species Associated with Old Growth Forests - Maintain ecological processes and provide for natural patch size distribution. Manage landscape patterns to develop larger old growth patch sizes where needed to satisfy wildlife habitat requirements.

h. Forest Matrix - Provide sufficient retention of forest structure (large diameter live trees, snags, and coarse woody debris) to provide for wildlife movement through the matrix surrounding old growth forests.

5. RANGE

Inventory, map, and complete an activity schedule for five significant noxious weed plant communities during the first planning period (Spotted Knapweed, Dalmation Toadflax, Leafy Spurge, Goatweed, and Whitetop.)

6. VEGETATION

a. Treatments - Program the following treatments during the time period pending Forest Plan revision. Treatment methods will be compatible with natural disturbance regimes.

(1) Regeneration harvest on 1700-2600 acres/year
(2) Reforestation on 1700-2600 acres/year
(3) Intermediate harvest on 3400-6200 acres/year
(4) Selection harvest on 100-200 acres/year
(5) Slash disposal on 5100-8900 acres/year
(6) Timber stand improvement on 1000-2000 acres/year
(7) Prescribed burning on 5000-7000 acres/year

b. Program Management - During the period pending revision, program up to the allowable sale quantity of 54 million board feet per year of timber harvest from suitable lands.

(1) Offer a mix of large and small (<2.0 MMBF) sales.
(2) Maintain an annual program of nonchargeable timber offerings from lands not suited for timber production and/or nonstandard logs in addition to chargeable volume from suitable lands.
(3) Maintain a mix of sale offerings for various logging systems needed to implement the Forest Plan and support local and regional logging systems capabilities.
(4) Maintain offerings of firewood and other miscellaneous forest products consistent with demand and other resource management goals.
(5) Emphasize treatment is stands with high risk of developing epidemic levels of insect and disease.

Refer to Appendices E, F, H, I, and L in support of these objectives.

c. Forest Composition and Structure - Manage landscapes to attain the 75% range around the median amount of old growth that occurred historically.

Landscape-level:

(1) Maintain or actively restore landscape composition, structure and patterns to a condition similar to that expected under natural disturbance and succession regimes. Manage landscape patterns to develop larger old growth patch sizes where needed to satisfy wildlife habitat requirements.
(2) Prior to implementing vegetation management actions requiring an EA or EIS, analyze historical vegetation conditions to guide development of desired landscape conditions and to provide context for stand-level management.
(3) Restore the amount and distribution of old growth forests to within the historical range of variability. To accomplish this objective, recruit additional old growth from appropriate mid-seral stands.
(4) Manage landscape composition and patterns to reduce the risk of undesirable fire, insect and pathogen disturbances.
(5) Prescribe landscape treatments that protect old growth forests from disturbances that threaten old growth composition and structure. Treatments within existing old growth may be appropriate where current insect and disease conditions pose a major and immediate threat to other stands.
(6) Where fuel conditions and potential fire regimes have been significantly affected by fire exclusion and timber management, manage landscape fuel conditions (amounts and spatial arrangement) to restore the historical fire regime and reduce the risk of undesirable fire events. Emphasize this objective in areas where wildlands interface with urban and rural areas of private property.
(7) Protect or restore riparian vegetation to provide for shade, large woody debris, sediment filtration and normal hydrologic function, consistent with the site potential and natural disturbance processes.

Stand-level:

(1) Late Seral/Old Growth

(a) In all Potential Vegetation Groups (PVGs) protect existing old growth forests. Prescribe management actions within old growth when necessary to maintain or restore old growth forest conditions consistent with native disturbance and succession regimes. Vegetation treatments for these purposes will emphasize areas with historically low and moderate severity fire regimes. In addition, prescribe management actions within existing old growth where circumstances pose significant risks to sustaining old growth composition and structure.

(b) In warm dry PVGs, maintain or restore the historic proportion of shade intolerant species, such as ponderosa pine and western larch, and large multistory or single-story stand structures consistent with native succession and disturbance regimes. Reduce tree density and the proportion of shade tolerant species such as Douglas-fir in areas where fire exclusion has altered stand composition and structure. Increase the amount of area where under-burning can be used as a management tool.

(c) In warm moist and cool moist PVGs, maintain or restore large multistory or single-story conditions and shade intolerant species such as western larch, western white pine, ponderosa pine and Douglas-fir. Maintain large multistory stands dominated by western redcedar. Reduce tree density and the proportion of shade tolerant species such as grand fir and subalpine fir in areas where fire exclusion has altered stand composition and structure.

(d) In cold moist PVGs, maintain or restore historic large multistory structures and proportion of shade intolerant species such as western larch and Douglas-fir. Reduce tree density and the proportion of shade tolerant species such as subalpine fir in areas where fire exclusion has altered stand composition and structure.

(e) In cold PVGs, maintain or restore multistory and single-story old growth. Treatments that affect existing old growth should be limited to those necessary to promote regeneration of blister rust-resistant whitebark pine.

(f) In riparian PVGs, maintain existing old growth composition and structures.

(2) Mid Seral

(a) Manage mid-seral stands to maintain the composition and structure expected under native succession and disturbance regimes. In all PVGs, maintain sufficient mid-seral stands to allow for recruitment of old growth within the historical range of variability. Emphasize old growth development in stands that are most likely to persist under native disturbance regimes, and that provide a patch size and pattern most advantageous to old growth associated wildlife species.

(b) In warm dry PVGs, reduce tree density and increase the proportion of shade intolerant species, such as ponderosa pine and western larch, where needed to promote development of open, single-story structures. This may include regeneration harvests that maintain large, shade intolerant trees.

(c) In warm moist, cool moist, and cold moist PVG's, manage mixed-conifer stands to reduce tree density where needed, to increase the proportion of shade intolerant species, such as western larch, western white pine, Douglas-fir and ponderosa pine, and to promote development toward old growth. Manage mid-seral lodgepole pine dominated stands to reduce the risk of epidemic levels of mountain pine beetle and large-scale stand replacement fires, especially where wildlands interface with urban and rural areas.

(d) In cold PVGs, promote the regeneration of blister-rust resistant whitebark pine through the use of prescribed fire, mechanical treatments, and planting of rust-resistant seedlings in currently roaded areas.

(e) In riparian PVGs, encourage development of forest structures that will provide for coarse woody debris recruitment and other riparian functions. Manage for desired stand density and promote development of old growth structures. Increase the proportion of Engelmann spruce, western redcedar, western larch, western white pine, and Douglas-fir; and maintain large cottonwood, birch, and aspen in areas to which they are adapted. Where consistent with other riparian management objectives and standards, implement management actions such as prescribed fire and thinning to achieve these objectives.

(3) Early Seral

(a) Manage early seral stands in a manner that promotes development of stand composition and structure that is characteristic of the biophysical setting. Design treatments to encourage development of diverse herbaceous and shrubby vegetation native to the site. Thinning treatments should retain the tree species that are best adapted to the succession and disturbance regimes of the site.

(b) In the warm/dry PVG, encourage the establishment and development of ponderosa pine and western larch.

(c) In the warm moist, cool moist and cold moist PVGs, encourage the establishment and development of blister-rust resistant western white pine and western larch where these species are adapted.

(d) In the cold PVG, encourage the establishment and development of blister-rust resistant whitebark pine and alpine larch.

(e) In riparian PVGs, encourage development of riparian forest structures that will provide for coarse woody debris recruitment and other riparian functions. Encourage cottonwood, birch, aspen, western red cedar, and western larch as stand components in areas to which these species are best adapted. Where consistent with watershed, fisheries and other riparian objectives and standards, implement management activities to achieve this objective through actions such as planting, thinning, and prescribed fire.

7. WATER AND SOILS

Develop watershed activity schedules for key watersheds.

Maintain an inventory of nonwilderness areas needing soil and water restoration. Complete restoration projects as funds permit.

Best Management Practices will be applied during Forest Plan implementation to ensure that Forest water quality goals will be met.

8. ROADS

Utilize transportation planning, which considers present and future uses, as an integral part of all project analysis to ensure appropriate road standards, minimum adverse effects on other resources, and the minimum mileage necessary of road construction/reconstruction.

All existing system and nonsystem roads will be reviewed as part of transportation planning for need, possible closure, or obliteration.

Implement a road management program that is responsive to resource protection needs, water quality goals, and public concerns. Miles of road left open to public use will be that amount necessary to meet public needs and resource management objectives.

9. CULTURAL RESOURCES

Meet all legal requirements each year. During the first decade, nominate significant cultural sites to the National Register of Historic Places.

10. THREATENED AND ENDANGERED PLANTS

a. Water Howellia (Howellia aquatilis)

Maintain unoccupied, potential pond habitats in suitable condition as colonization sites.

Give emphasis to land acquisition, exchanges, or conservation easements with willing private landowners that would protect water howellia habitat, giving priority to ponds occupied by the species, particularly in the Lindbergh Lake occurrence cluster.

INFISH

Table A-1. Interim Riparian Management Objectives.

Habitat Feature	Interim Objectives
Pool Frequency (kf[1]) (all systems)	Varies by channel width (see Table A-2)
Water Temperature (sf[2])	No measurable increase in maximum water temperature (7-day moving average of daily maximum temperature measured as the average of the maximum daily temperature of the warmest consecutive 7-day period). Maximum water temperatures below 59F within adult holding habitat and below 48F within spawning and rearing habitats.
Large Woody Debris (sf) (forested systems)	East of Cascade Crest in Oregon, Washington, Idaho, Nevada, and western Montana: >20 pieces per mile; >12 inch diameter; >35 foot length.
Bank Stability (sf) (non-forested systems)	>80 percent stable.
Lower Bank Angle (sf) (non-forested systems)	>75 percent of banks with <90 degree angle (i.e., undercut).
Width/Depth Ratio (sf) (all systems)	<10, mean wetted width divided by mean depth.

[1] Key feature.
[2] Supporting feature.

Table A-2. Interim Objectives For Pool Frequency.

Wetted width (feet)	10	20	25	50	75	100	125	150	200
Pools per mile	96	56	47	26	23	18	14	12	9

Riparian Habitat Conservation Areas

Interim Riparian Habitat Conservation Areas (RHCAs) would be delineated in every watershed on National Forest System lands within the geographic range and strategy.

Riparian Habitat Conservation Areas are portions of watersheds where riparian-dependent resources receive primary emphasis, and management activities are subject to specific standards and guidelines.

Riparian Habitat Conservation Areas include traditional riparian corridors, wetlands, intermittent streams, and other areas that help maintain the integrity of aquatic ecosystems by (1) influencing the delivery of course sediment, organic matter, and woody debris to streams, (2) providing root strength for channel stability, (3) shading the stream, and (4) protecting water quality (Naiman et al. 1992).

Widths of interim Riparian Habitat Conservation Areas that are adequate to protect streams from non-channelized sediment inputs should be sufficient to provide other riparian functions, including delivery of organic matter and woody debris, stream shading, and bank stability (Brazier and Brown 1973, Gregory et al. 1984, Steinblums et al. 1984, Beschta et al. 1987, McDade et al. 1990, Sedell and Beschta 1991, Belt et al. 1992). The effectiveness of riparian conservation areas in influencing sediment delivery from non-channelized flow is highly variable. A review by Belt et al. (1992) of studies in Idaho (Haupt 1959a and 1959b, Ketcheson and Megehan 1990, Burroughs and King (1985 and 1989) and elsewhere (Trimble and Starz 1957, Packer 1967, Swift 1986) concluded that non-channelized sediment flow rarely travels more than 300 feet and that 200-300 foot riparian "filter strips" are generally effective at protecting streams from sediment from non-channelized flow.

Interim RHCA widths would apply where watershed analysis has not been completed. Site-specific widths may be increased where necessary to achieve riparian management goals and objectives, or decreased where interim widths are not needed to attain RMOs or avoid adverse effects. Establishment of RHCA's would require completion of watershed analysis to provide the ecological basis for the change. However, interim RHCA's may be modified by amendment in the absence of watershed analysis where stream reach or site-specific data support the change. In all cases, the rationale supporting RHCA widths and their effects would be documented.

Standard Widths Defining Interim RHCAs

The four categories of stream or water body and the standard widths for each are:

Category 1 - Fish bearing streams: Interim RHCAs consist of the stream and the area on either side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of two site-potential trees, or 300 feet slope distance (600 feet, including both sides of the stream channel), whichever is greatest.

Category 2 - Permanently flowing non-fish-bearing streams: Interim RHCAs consist of the stream and the area on either side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year flood plain, or to the outer edges of riparian vegetation, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance (300 feet, including both sides of the stream channel), whichever is greatest.

Category 3 - Ponds, lakes, reservoirs, and wetlands greater than 1 acre: Interim RHCAs consist of the body of water or wetland and the area to the outer edges of the riparian vegetation, or to the extent of the seasonally saturated soil, or to the extent of moderately and highly unstable areas, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance from the edge of the maximum pool elevation of constructed ponds and reservoirs or from the edge of the wetland, pond or lake, whichever is greatest.

Category 4 - Seasonally flowing or intermittent streams, wetlands less than 1 acre, landslides, and landslide-prone areas: This category includes features with high variability in size and site-specific characteristics. At a minimum the interim RHCAs must include:

a. the extent of landslides and landslide prone areas

b. the intermittent stream channel and the area to the top of the inner gorge

c. the intermittent stream channel or wetland and the area to the outer edges of the riparian vegetation.

d. for Priority Wetlands, the area from the edges of the stream channel, wetland, landslide, or landslide-prone area to a distance equal to the height of one site-potential tree, or 100 feet slope distance, whichever is greatest.

e. for watersheds not identified as Priority Watersheds, the area from the edges of the stream channel, wetland, landslide, or landslide-prone area to a distance equal to the height of one-half site potential tree, or 50 feet slope distance, whichever is greatest.

In non-forested rangeland ecosystems, the interim RHCA width for permanently flowing streams in categories 1 and 2 is the extent of the 100-year flood plain.

B. PROJECTED OUTPUTS AND ACTIVITIES BY TIME PERIODS

Within each Subbasin (Fig. 2), identify priority watersheds for resource analysis and management activities. Establish an integrated activity schedule and update annually. Appendix M contains vegetation management opportunities for the period 1998-2001.

Allowable Sale Quantity - Pending Forest Plan revision, the maximum annual allowable sale quantity will be 54 MMBF.

C. RESEARCH NATURAL AREA AND BOTANICAL SPECIAL INTEREST AREA OBJECTIVES

Research Natural Areas are part of a national system of areas designated because of their representative and/or unique natural and ecological characteristics. The management objective is to

maintain their natural condition and features for non-manipulative research and baseline comparisons, public education, and conservation of biological diversity.

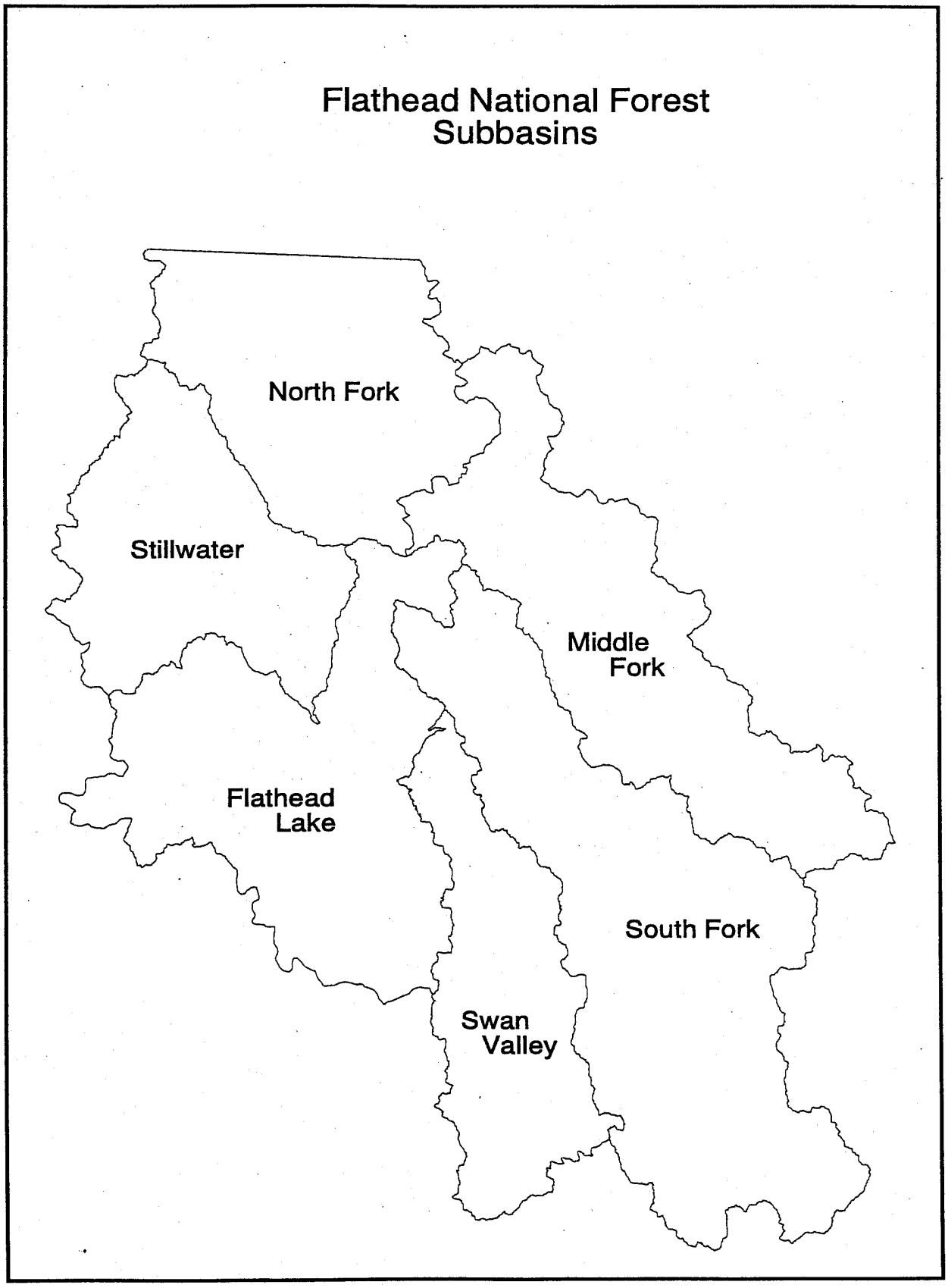
Botanical Special Interest Areas are established for the protection of unusual or uncommon botanical values, for purposes of conservation, scientific research and public enjoyment.

Regional habitat types listed in table II-2 were assigned by the Northern Regional Guide as the Forest's objectives for representation of Research Natural Areas. Establishment records have been prepared for each designated area.

Table II-2 also lists target habitat types that are not represented in a designated or proposed RNA. Field examinations will be conducted in areas where these habitat types have been tentatively identified to investigate opportunities for additional RNAs.

Table II-2 - Research Natural Areas and Special Interest Areas, Flathead National Forest

Area	Target Habitat Types	Acres
Coram RNA	260 PSME/PHMA	988
East Shore RNA	310 PSME/SYAL	646
LeBeau RNA	450 PICEA/VACA	5308
Little Bitterroot RNA	230 PSME/FESC	200
Swan River RNA	420 PICEA/CLUN, 520 ABGR/CLUN, 530 THPL/CLUN	690
Tuchuck RNA	620 ABLA/CLUN, 660 ABLA/LIBO, ALPINE	2062
Under investigation	410 PICEA/EQAR, 570 TSHE/CLUN, 610 ABLA/OPHO	
Under investigation (Non-forested)	AGSP/POSA, FESC/AGSP, ARTR/FESC, PUTR/FESC	
Condon Botanical Area	ponds, wetlands	229


Flathead National Forest
Subbasins
North Fork
Stillwater
Middle
Fork
Flathead
Lake
South Fork
Swan
Valley

D. ADDITIONAL DATA REQUIREMENTS AND ACCOMPLISHMENT SCHEDULE

Continue old growth survey to fill in data gaps and to verify conditions within candidate old growth stands.

Conduct Forest-wide analysis of reference conditions and trends in landscape patterns.

Assess current and reference conditions to define landscape patterns including patch size, distribution, and connectivity at the watershed scale.

In the event of unanticipated disturbance events, such as wildfire, windstorm or bark beetle epidemic, conduct a post-disturbance assessment prior to salvage harvest of stands that were formerly in Large Multistory and Medium Multistory structure. Evaluate the likely effects of treatment, including no action, in order to ascertain potential future hazard and risk to adjacent stands, as well as the legacy value of large trees, snags and coarse woody debris to fire-associated wildlife species and future stand structure.

RESEARCH NEEDS

Many research needs have been proposed during development of this Forest Plan, including those by concerned publics during the formal comment periods for the Draft Environmental Impact Statement documents. Listed below are those that will assist the accomplishment of the Plan. It is anticipated that other research needs will be identified during monitoring and evaluation as the Plan is implemented. They will be evaluated by the Regional Forester for inclusion in the Regional research program proposal.

-- Validate the effects of Forest management activities on the behavior, security, and habitat needs of threatened and endangered species particularly grizzly bear and gray wolf.

-- Cooperate with the Montana Department of Fish, Wildlife, and Parks and the U.S. Fish and Wildlife Service in research that validates population levels and trends for grizzly bears.

-- Validate the effects of Forest management activities on changes in water yield and sediment production as they affect bull trout and cutthroat trout habitat.

-- Cooperate with the Montana Department of Fish, Wildlife, and Parks and the U.S. Fish and Wildlife Service in research necessary to further determine the status of woodland caribou and wolverine.

-- Determine the effectiveness of the Limits of Acceptable Change planning and management concept as an indicator in monitoring ecosystem change and trends in wilderness use and user satisfaction in the Bob Marshall Wilderness Complex and Flathead Wild and Scenic River System?

-- Validate the effects of Forest management activities on long-term productivity of soils.

-- Determine the most effective and economical survey techniques for measuring visitor use and satisfaction by ROS (Recreation Opportunity Spectrum) class.

-- Determine the factors limiting resident and adfluvial westslope cutthroat trout populations including forest management activities, natural environmental influences (drought, winter conditions, inter-specific competition, etc.), and angler harvest.

DESIRED FUTURE CONDITION OF THE FOREST

This section describes what the future Forest should be like if the management direction contained in the Forest Plan is implemented. It summarizes the anticipated physical changes which would result from carrying out planned management practices, at two points in time: at the end of 10 years and at the end of 50 years (RPA planning horizon).

A. THE FOREST IN 1995 (CHANGES FROM 1985)

At the end of the first decade, there will have been only minimal change in the overall appearance of the Forest. Timber regeneration harvests will have taken place on 66,000 acres at an average annual level of 100 million board feet. Reforestation will be accomplished on 66,070 acres. Timber stand improvement will be applied on 34,000 acres.

Approximately 508 miles may be added to the road system. Miles of major reconstruction will be 170. The new roads are primarily local logging roads that will be permanently or seasonally closed.

Elk potentials on the Forest will be 5,503 animals. Effects on big-game summer range will be minor due to specific management objectives (i.e., road closures) on key areas and the large amount of roadless areas still available.

The current grazing program will have been maintained.

There will be sufficient old-growth timber suitable to meet the needs of old growth dependent wildlife; however, old-growth timber will be reduced below current levels. Old-growth habitat is provided on 20 percent of commercial quality Forest lands below 5,000 feet in elevation.

Habitat to support threatened and endangered species will be enhanced compared to current levels.

Fisheries habitat will be improved from current levels. Fish habitat will have been improved on 710 acres of water.

Recreation will be provided that includes all activities in the Recreation Opportunity Spectrum. Developed recreation will be maintained at current levels. Capacity for dispersed recreation will exceed the projected use for primitive/semiprimitive recreation and roaded natural recreation. Wilderness resources and recreation quality will have been improved through completion of the Limits of Acceptable Change process and the implementation of the monitoring program. Fire will have played a more natural role in wilderness, and diversity will be improved. Approximately 98,100 acres of the 495,400 roadless acres inventoried in 1983 would be proposed for wilderness, with an additional 380,300 acres to remain roadless. Some of the inventoried roadless area is planned for permanent roadless management (about 287,700 acres), while other acreage will eventually be roaded as timber growth matures and the Forest's transportation planning is completed.

The total roadless resource will decrease as some of the roadless areas are developed through the timber management program. About 95 percent of the 1983 inventoried roadless acreage will remain in 1995. The trail system will have been maintained at current levels with emphasis on reconstruction of 50 miles of substandard trails.

Mineral development will have increased on the Forest. Physical and biological impacts will have been minimized as both resource managers and mining operators will have become accustomed to working with the mining regulations and lease stipulations.

B. THE FOREST IN 2035 (CHANGES FROM 1985)

By the end of the fifth decade, many changes will be apparent in the overall condition of the Forest.

Timber will have been harvested on 288,000 acres, and the annual program is predicted to be 152 million board feet. There will have been a drop Forest-wide in the mature age class (from 63 to 57 percent) and an increase in the immature age class (from 37 to 43 percent). This trend will continue into the future and will result in a managed Forest.

Old growth habitat on suitable timberlands will continue to decline as overmature timber is converted to younger, more vigorous stands; however, sufficient old growth habitat will still exist to maintain viable populations of old growth dependent wildlife.

Reforestation will have been accomplished on 288,000 acres with all of the existing nonstocked land reforested. Timber stand improvement will have occurred on 233,000 acres.

As a result of the timber harvest programs, 2,441 miles will have been added to the road system. Miles of major reconstruction will be 850. Approximately 100 percent of the suitable land base will have been accessed and the Forest transportation system will be complete.

Elk winter range will have improved potential to support 7,800 animals.

Habitat to support threatened and endangered species will be maintained or enhanced.

Fisheries habitat will have improved potential to support 406,000 catchable trout. The stream channels will be protected with increased cover.

Forest soil productivity will have been maintained.

The grazing program will remain the same as Decade 1 levels.

No new campsites will be built, but developed recreation capacity will be adequate to meet projected use. Capacity for recreation in a roaded natural setting will be higher and sufficient to meet the projected use. Capacity for recreation in a primitive and semiprimitive setting will not be adequate to meet projected use requiring more controls on visitor use. The remainder of the roadless acres inventoried in 1983, still being managed as roadless, will total about 287,700 acres.

Mineral development will have continued to increase on the Forest.

FOREST-WIDE STANDARDS

The following standards apply to the National Forest System land that is administered by the Flathead National Forest. They are intended to supplement, not replace, the National and Regional policies, standards, and guidelines found in Forest Service Manuals and Handbooks and the Northern Regional Guide.

Resource management standards are designed to facilitate reaching Forest goals and objectives through attainment of management area goals. On-the-ground application of some standards may vary between Management Areas. Generally these Forest-wide standards will be followed unless the application of these standards will not facilitate reaching management area goals. It is the cumulative total of management area goals that result in attaining Forest goals.

A. GENERAL STANDARDS

1. Standards are not discretionary. They apply to all National Forest System Lands and will be followed unless the standards are amended. Any and all amendments of the LRMP standards will be undertaken in compliance with NEPA and the amendment process of the NFMA regulations (36 CFR 219.10(e)), and with public involvement. Amendments may be undertaken in two ways: 1) Standard(s) may be amended for all future activities, or 2) Standard(s) may be amended for a single project only. A project-specific amendment of a Forest Plan standard may be undertaken if it is demonstrated during project analysis that it will fulfill the objective of the standard and related goals. The rationale for project-specific amendments to Forest Plan standards must be described in the project's Decision Memo, Decision Notice, or Record of Decision. A project-specific amendment authorizing an exception to a Forest Plan standard must be issued, by the Forest Supervisor, concurrent with the project decision. Project-specific amendments of Forest Plan standards will in every instance be made in compliance with the Forest Service's legal requirements under the Endangered Species Act, Clean Water Act, NFMA, NEPA, and all other applicable laws.

   Standards established for threatened and endangered species conservation and protection are mandatory, and thus take precedence when there are conflicting uses. Project-specific amendments of such standards may be considered if they will fulfill the Forest Plan goals related to the conservation of threatened and endangered species. Any amendment to standards established for threatened and endangered species conservation and protection must be preceded by consultation with the U.S. Fish and Wildlife Service.

2. The grizzly bear objectives and standards of Amendment 19, which are required by the Terms and Conditions of the U.S. Fish and Wildlife Service's Biological Opinion on Amendment 19, are not discretionary. These objectives and standards supersede any conflicting or inconsistent management direction contained in the Forest Plan.

3. The objectives and standards of Amendment 21 supersede any conflicting or inconsistent management direction contained in the Forest Plan.

4. Initiate informal consultation procedures with the U. S. Fish and Wildlife Service in the early planning phases of site-specific projects if a "no effect/may effect" determination is unclear. If a "may effect" determination is made, formal consultation with the U.S. Fish and Wildlife Service is required.

B. RECREATION

1. Use the ROS (Recreation Opportunity Spectrum) as a guide to provide the full array of recreation opportunities on the Forest (see Appendix A).[1]

2. Encourage Forest visitors not desiring a wilderness setting to use nonwilderness National Forest System lands which can provide for their recreation needs.

3. Develop additional cross-country ski trails where increased demand exists. Encourage ski trail development within the private sector.

4. Encourage groomed cross-country ski trails through cooperative agreements with local organized user groups.

5. Continue the Memorandum of Understanding with the State of Montana to provide grooming and maintenance of snowmobile trails.

6. Complete a ROG (Recreation Opportunity Guide) for each Ranger District to make recreation opportunities more visible.

7. Emphasize "low impact" techniques in dispersed recreation areas and continue those established for wildernesses to reduce management costs and resource impacts.

8. All outfitter and guide activities on the Flathead National Forest will be authorized by an outfitter-guide permit as per FSM 2721.53. Utilize the "Outfitter-Guide Application Evaluation Procedure" to respond to new outfitter and guide applications (Appendix B).

9. Prohibit surface occupancy for oil and gas activities within 400 feet of any developed recreation sites. Within one-fourth mile of developed recreation sites, coordinate the timing and location of exploration activities to minimize or avoid conflict with established recreation use at the time the exploration activity is proposed.

10. As per Executive Order 11644, through the Flathead National Forest Travel Planning Direction (Appendix C), and in conformance with the ROS designations for specific areas, designate use restrictions on roads, trails, and specified areas along with designating areas for ORV (Off-road Vehicle) use.

11. Retain the existing capacity of National Forest developed recreation sites on the Flathead National Forest during the next 10 years. The quality of the developed recreation opportunities

[1] The ROS User's Guide, a Forest Service Handbook, presents the ROS system as the basic framework for inventorying, planning, and managing the recreation resource. It is incorporated in this Forest Plan as unbound appendix AA.

available will be improved through "full-service" maintenance[2] or redesign and reconstruction of existing sites to better accommodate present and future needs. Some slight capacity changes may occur as a result of these improvements; however, the changes will provide a better service to the public. No expansion of campground capacity will be permitted if the expansion competes with campgrounds in the private sector.

Big Mountain Ski Area will have significant expansion in the next 10 years.

12. District Rangers will develop annual trail maintenance schedules and maintain trails to an appropriate level according to their maintenance priority classification (see Appendix D), use level, and ROS objectives.

13. System trails located in resource development areas must be included in the project environmental analysis. Any decision to abandon the trail must be clearly documented. To the extent possible, trails should be protected during project activities, and when it is not practical to preserve an existing trail, the trail should be relocated temporarily or permanently (Regional Forester memo to Forest Supervisor, 2353 Development Trails, November 15, 1977).

C. VISUAL QUALITY

1. In each management area, meet or exceed the recommended VQO (visual quality objective). Where management area goals and objectives can be fully achieved and a higher VQO met without increased costs or reduced future options, the higher VQO should be achieved.

2. Visual resource analysis will normally be part of all project planning in the following areas of the Forest:

   Noisy Face - Swan Lake Ranger District
   East Shore - Swan Lake Ranger District
   Cedar Creek - Glacier View Ranger District
   Lost Rhodes - Tally Lake Ranger District
   Big Mountain - Tally Lake Ranger District
   Holland Lake - Swan Lake Ranger District
   Tally Lake - Tally Lake Ranger District
   Wild and Scenic River Corridors (Recreation and Scenic portions)
   North Fork of the Flathead River
   Middle Fork of the Flathead River
   South Fork of the Flathead River
   Swan Lake - Swan Lake Ranger District
   Swan Highway - Swan Lake Ranger District
   Middle Fork - Hungry Horse Ranger District

   See Appendix M for specific project proposals.

[2] "Full Service" maintenance is specified in Forest Service standards and guidelines on Cleaning Recreation Sites, July 1980, USDA FS #80231801, pages 6-7.

3. Through the use of proper design and scheduling of activities, potential impacts on the visual resource will be dispersed and not concentrated within an area or travel corridor within a short time frame.

   Achieving the long-term visual quality goal on the Forest will work in direct proportion to how well the cumulative effects of time and space are addressed.

   The time and space principles especially need to be applied to the key areas mentioned above. These areas are not viewed as a whole at one time; however, they are viewed sequentially from primary use areas, travel routes, or recreation sites.

4. Special concerns due to catastrophic events will be handled on a case-by-case basis.

D. WILDERNESS

1. Standards for managing the Bob Marshall and Great Bear Wildernesses (Management Area 21), and also the Mission Mountains Wilderness (Management Area 22), are contained in Chapter III.

2. Recommended additions to the National Wilderness Preservation System are shown on the geographic unit maps in Chapter IV and the Management Area Map. In the event Congress does not classify these areas as wilderness system additions, each is also assigned to a nonwilderness management area. Management standards for these recommended additions will be consistent with the standards of the nonwilderness management area designation, except that no action can occur which will reduce the areas' wilderness attributes until Congress has made a decision on wilderness classification or otherwise specified how these areas will be managed. Any contiguous lands added to the Bob Marshall Wilderness Complex by Congress will be managed similar to MA 21. Jewel Basin, if added to the National Wilderness Preservation System, shall be managed in accordance with current management area direction until new wilderness management area direction can be developed.

E. CULTURAL RESOURCES

1. INVENTORY

The Forest will continue to undertake cultural resource inventories employing qualified cultural resource specialists, paraprofessionals, volunteers, and consultants. Cultural resource inventories will be conducted on all ground-disturbing projects that are generated, licensed, permitted, or allowed to occur by the Forest Service. Forest inventory efforts will focus on:

a. Areas where specific project activities such as timber sales, road construction, mineral exploration, and development result in significant ground disturbance.

b. Areas where formal cultural resource inventories will provide management data that are broadly applicable to ecologically similar areas which may facilitate the development of predictive models capable of addressing issues of cultural site density, distribution, and significance.

Large-scale inventory projects involving such things as surface mines, oil fields, and pipelines greatly exceed Forest In-Service inventory capabilities. These types of projects will be inventoried

by consultants operating under special-use permits. Consultants, universities, or museums conducting privately sponsored, project-specific cultural resource inventories must coordinate all such activities with the appropriate Ranger District and the Forest Archaeologist. Work conducted by personnel outside of the Forest Service will be required to meet all current Federal standards and qualifications. The Forest will ensure the level of performance required through permit administration, field compliance inspections, report review, and the preparation of scope-of-work documents for more complex projects.

The Forest will encourage scientific research by privately funded organizations when the research can be used as a means of acquiring additional inventory and interpretive data.

2. EVALUATION

Identified cultural resources will be evaluated in relation to published ACHP (Advisory Council on Historic Preservation) criteria for eligibility to the National Register of Historic Places. Cultural resource sites determined eligible will be nominated to the National Register.

3. PROTECTION - PRESERVATION

Known, significant cultural resource sites on the Forest will be protected from inadvertent or intentional damage or destruction. Protective measures may include:

a. Physical on-site measures such as fences or grates.

b. Posting of warning signs about the antiquities law.

c. Protection of site locational information.

d. Law enforcement measures such as patrolling and investigation of antiquities violations.

Site protective measures will be employed only in cases where their implementation will not degrade a significant cultural property and only with approval of the Forest Supervisor.

Significant cultural resource sites will be preserved in place whenever possible. When such resources are threatened by another resource activity or project development, an effort will be made to avoid or minimize adverse impact by redesigning the project. When avoidance of a significant cultural property or site is judged not to be prudent or feasible by the Forest Supervisor, the scientific or historical values of the site will be conserved through proper scientific excavation, recordation, analysis, and reporting.

4. ENHANCEMENT AND INTERPRETATION

The Forest will enhance and interpret significant cultural sites for the education and enjoyment of the public when such development will not degrade the cultural property or conflict with other resource considerations. Interpretation and enhancement of significant cultural resources may include, but are not limited to:

a. Scientifically and historically accurate displays, brochures, posters, signs, lectures, and tours.

b. Encouragement of scientific or historical research on the Forest and the distribution of the results to the public. Archaeologists and historians conducting research on the Forest will be encouraged to present lectures, slide shows, or films for the education and enjoyment of the public.

5. COORDINATION AND CONSULTATIONS

The Forest will make an effort to coordinate cultural resource issues and concerns with appropriate Native American groups, other Federal and State agencies, the historical and archaeological communities, and the general public.

Some issues of interest to Native American groups concern burials, areas of sacred or religious significance, and the accuracy of portrayals of Native Americans in displays or at interpretive sites. Unmarked historic burials are another area of concern.

In the event that Native American or historic graves are discovered in the course of ground-disturbing activities, the Forest will take the following actions:

a. Evaluation by a Forest Service Archaeologist will be made immediately to determine if the skeletal remains are human and to what time frame or ethnic group they may be related.

b. Reinterment in place and avoidance of further disturbance by project redesign will be considered.

c. In cases where affiliation with an extant Native American group can be reliably ascribed and where reinterment in place is not prudent or feasible, the appropriate Native American entity will be contacted regarding proper reinterment elsewhere.

d. Human skeletal remains which cannot be accurately connected with living Native Americans or a historic group will be scientifically excavated, analyzed, and reported. These remains will be permanently stored at the University of Montana.

The Forest will take into consideration in its multiple-use management process sites which are former or current ceremonial or religious sites. The Forest will continue to consult with local Native American groups with regard to the American Indian Religious Freedom Act.

Portrayals of Native Americans in brochures, displays, or at interpretive sites will be historically and scientifically accurate.

All cultural resource related activities will be conducted in consultation with the Montana State Historic Preservation Office.

F. WILDLIFE AND FISH [3]

1. MANAGEMENT INDICATOR SPECIES

Management Indicator Species include:

Commonly hunted species (elk, mule deer, white-tailed deer);

Threatened and Endangered species (grizzly bear, gray wolf, bald eagle, peregrine falcon, water howellia, and bull trout);

Sensitive wildlife species (common loon, harlequin duck, flammulated owl, boreal owl, black-backed woodpecker, western big-eared bat, northern bog lemming, lynx, wolverine, fisher);

Fish species (westslope cutthroat trout).

2. FISH

a. The Flathead National Forest will be managed to maintain and, where feasible, improve fish habitat capacities in order to achieve cooperative goals with the State Department of Fish, Wildlife, and Parks and to comply with State water quality standards.

   Sedimentation attributed to land management activities will be controlled so that unacceptable fish losses[4] do not occur. Fish habitat and riparian management activities will be coordinated in order to provide suitable riparian vegetation to aquatic habitats. An annual program of direct habitat improvement work will be pursued.

b. The following non-wilderness streams are considered critical or important spawning and/or rearing habitat for bull trout on the Flathead National Forest. These streams are designated MA-12:

Swan Lake Ranger District	Glacier View Ranger District	Hungry Horse Ranger District
Elk Creek	Whale Creek	Bear Creek
Goat Creek	Shorty Creek	Granite Creek
Squeezer Creek	Coal Creek	Morrison Creek
Lion Creek	South Fork Coal Creek	Puzzle Creek
Jim Creek	Mathias Creek	
Cold Creek	Trail Creek	
North Fork Lost Creek	Big Creek	
South Fork Lost Creek	Hallowat Creek	
Piper Creek	Red Meadow Creek	

The following pertains to the critical or important spawning and/or rearing bull trout streams listed above:

1. Sediment model techniques will be used in these streams to evaluate potential effects of proposed development on bull trout habitat. New information and technology from annual monitoring and research efforts (on and off Forest) will be used to refine sediment analyses.

[3] Includes rare plant species

[4] Refer to Unbound Appendix EE

2. The risk of stream sedimentation from management activities will be assessed by fisheries and watershed specialists in consultation with state fisheries biologists. Estimated increases in sediment delivery rates will be held to a level that does not pose a significant threat of sediment deposition in spawning and rearing habitat. A significant threat occurs when, in the judgment of these professionals, an unacceptable risk to fish production is likely. Streams judged to have elevated levels of fine materials will be considered especially sensitive to increases in sediment delivery from human activities. Streams currently containing low sediment levels (<30%) will be protected from incremental, but cumulatively significant sedimentation of fish habitat from management activities.

3. An inventory and evaluation of existing streambed condition and sediment sources will be required before undertaking any project involving significant ground disturbance in the sediment contributing zone of these drainages. Appropriate rehabilitation of sediment sources will be required.

4. Debris barriers (log jams) will be opened as needed to maintain fish passage in these streams. Opportunities for expansion of migratory bull trout habitat will be pursued.

c. The following management standards will be applied to all streams that are known to contain westslope cutthroat trout on the Flathead National Forest.

1. Management activities in riparian zones will be designed to provide at least 40 recruitable trees (greater than 10-inch DBH) per 1000 feet of stream per 30 year period (instream lifespan) for pool formation and instream cover.

2. Stream canopy shading will be maintained so that maximum summer water temperatures do not exceed 17 degrees C for more than 4 hours a day nor more than 14 days a year. Where water temperatures naturally exceed this level, planting exposed streambanks with shade-producing vegetation will be considered.

3. Fish habitat will be protected by controlling sediment sources and/or limiting management activities. Before any significant ground disturbing activities are undertaken that could affect critical habitat in these drainages, surveys will be conducted to assess streambed condition and identify sediment sources. Appropriate rehabilitation of sediment sources will be required. Where analysis of existing conditions shows risk to future fish productivity, protection of fish habitat will become a management priority for subsequent actions.

4. Opportunities for recovery of westslope cutthroat trout populations in streams having non-native trout will be pursued.

Fisheries and watershed specialists from the Flathead National Forest and the Montana Department of Fish, Wildlife, and Parks will meet annually to review monitoring data and ensure that the above standards are being successfully applied. Where streambed monitoring records are available, a range of one standard deviation from the mean value will define the present condition. Any greater increases in sediment will require further investigation and appropriate

remedial action. New information and technology from ongoing research and monitoring will be incorporated into the above standards.

INFISH Standards and Guidelines

Project and site-specific standards and guidelines listed below would apply to all RHCAs and to projects and activities in areas outside RHCAs that are identified through NEPA analysis as potentially degrading RHCAs. The combination of the standards and guidelines for RHCAs specified below with the standards and guidelines of existing forest plans and Land Use Plans would provide a benchmark for management actions that reflects increased sensitivities and a commitment to ecosystem management.

Under the strategy, the standards and guidelines listed below would be applied to the entire geographic area for the project. Due to the short-term duration of this interim direction, provisions for development and implementation of road/transportation management plans and the relocation, elimination, or reconstruction of existing roads, facilities, and other improvements (i.e., RF-2 c, RF-3 a and c, RF-4, RF-5, GM-2, RM-1, and MM-2) would be initiated but would be unlikely to be completed during the interim period. Where existing roads, facilities, and other improvements found to causing an unacceptable risk cannot be relocated, eliminated, or reconstructed, those improvements would be closed. Also, due to the short-term duration of this direction, adjustments to management not within the sole discretion of the Agencies (i.e., RF-1, LH-3, RA-1 WR-2, FW-3, and FW-4) would be initiated but would be unlikely to be completed during the interim period.

The standards and guidelines under the Inland Native Fish Strategy have the same intent as the 38 standards and guidelines under the Idaho Conservation Strategy. The Inland Native Fish Strategy has one additional standard and guideline (RA-4), related to storage of fuels and refueling in RHCA's.

Many people commented on the draft what it meant to not retard the attainment of the RMOs. For the purposes of analysis, to "retard" would mean to slow the rate of recovery below the near natural rate of recovery if no additional human caused disturbance was placed on the system. This obviously will require professional judgment and should be based on watershed analysis of local conditions.

Timber Management

TM-1 Prohibit timber harvest, including fuelwood cutting, in Riparian Habitat Conservation Areas, except as described below.

a. Where catastrophic events such as fire, flooding, volcanic, wind, or insect damage result in degraded riparian conditions, allow salvage and fuelwood cutting in Riparian Habitat Conservation Areas only where present and future woody debris needs are met, where cutting would not retard or prevent attainment of other Riparian Management Objectives, and where adverse effects can be avoided to inland native fish. For Priority Watersheds, complete watershed analysis prior to salvage cutting in RHCAs.

b. Apply silvicultural practices for Riparian Habitat Conservation Areas to acquire desired vegetation characteristics where needed to attain Riparian Management Objectives. Apply silvicultural practices in a manner that does not retard attainment of Riparian Management Objectives and that avoids adverse effects on inland native fish.

Roads Management

RF-1 Cooperate with Federal, Tribal, State, and county agencies, and cost-share partners to achieve consistency in road design, operation, and maintenance necessary to attain Riparian Management Objectives.

RF-2 For each existing or planned road, meet the Riparian Management Objectives and avoid adverse effects to inland native fish by:

a. completing watershed analyses prior to construction of new roads or landings in Riparian Habitat Conservation Areas within priority watersheds.

b. minimizing road and landing locations in Riparian Habitat Conservation Areas.

c. initiating development and implementation of a Road Management Plan or a Transportation Management Plan. At a minimum, address the following items in the plan:

1. Road design criteria, elements, and standards that govern construction and reconstruction.
2. Road management objectives for each road.
3. Criteria that govern road operation, maintenance, and management.
4. Requirements for pre-, during-, and post-storm inspections and maintenance.
5. Regulation of traffic during wet periods to minimize erosion and sediment delivery and accomplish other objectives.
6. Implementation and effectiveness monitoring plans for road stability, drainage, and erosion control.
7. Mitigation plans for road failures.

d. avoiding sediment delivery to streams from the road surface.

1. Outsloping of the roadway surface is preferred, except in cases where outsloping would increase sediment delivery to streams or where outsloping is infeasible or unsafe.
2. route road drainage away from potentially unstable stream channels, fills, and hillslopes.

e. avoiding disruption of natural hydrologic flow paths.

f. avoiding sidecasting of soils or snow. Sidecasting of road material is prohibited on road segments within or abutting RHCAs in priority watersheds.

RF-3 Determine the influence of each road on the Riparian Management Objectives. Meet Riparian Management Objectives and avoid adverse effects on inland native fish by:

a. reconstructing road and drainage features that do not meet design criteria or operation and maintenance standards, or that have been shown to be less effective than designed for controlling sediment delivery, or that retard attainment of Riparian Management Objectives, or do not protect priority watersheds from increased sedimentation.

b. prioritizing reconstruction based on the current and potential damage to inland native fish and their priority watersheds, the ecological value of the riparian resources affected, and the feasibility of options such as helicopter logging and road relocation out of Riparian Habitat Conservation Areas.

c. closing and stabilizing or obliterating, and stabilizing roads not needed for future management activities. Prioritize these actions based on the current and potential damage to in land native fish in priority watersheds, and the ecological value of the riparian resources affected.

RF-4 Construct new, and improve existing, culverts, bridges, and other stream crossings to accommodate a 100-year flood, including associated bedload and debris, where those improvements would/do pose a substantial risk to riparian conditions. Substantial risk improvements include those that do not meet design and operation maintenance criteria, or that have been shown to be less effective than designed for controlling erosion, or that retard attainment of Riparian Management Objectives, or that do not protect priority watersheds from increased sedimentation. Base priority for upgrading on risks in priority watersheds and the ecological value of the riparian resources affected. Construct and maintain crossings to prevent diversion of streamflow out of the channel and down the road in the event of crossing failure.

RF-5 Provide and maintain fish passage at all road crossings of existing and potential fish-bearing streams.

Grazing Management

GM-1 Modify grazing practices (e.g., accessibility of riparian areas to livestock, length of grazing season, stocking levels, timing of grazing, etc.) that retard or prevent attainment of Riparian Management Objectives or are likely to adversely effect inland native fish. Suspend grazing if adjusting practices is not effective in meeting Riparian Management Objectives.

GM-2 Locate new livestock handling and/or management facilities outside Riparian Habitat Conservation Areas. For existing livestock handling facilities inside the Riparian Habitat Conservation Areas, assure that facilities do not prevent attainment of Riparian Management Objectives. Relocate or close facilities where these objectives cannot be met.

GM-3 Limit livestock trailing, bedding, watering, salting, loading, and other handling efforts to those areas and times that would not retard or prevent attainment of Riparian Management Objectives or adversely affect inland native fish.

GM-4 Adjust wild horse and burro management to avoid impacts that prevent attainment of Management Objectives or adversely affect inland native fish.

Recreation Management

RM-1 Design, construct, and operate recreation facilities, including trails and dispersed sites, in a manner that does not retard or prevent attainment of the Riparian Management Objectives and avoids adverse effects on inland native fish. Complete watershed analysis prior to construction of new recreation facilities in Riparian Habitat Conservation Areas within priority watersheds. For existing recreation facilities in Riparian Habitat Conservation Areas, assure that the facilities or use of the facilities would not prevent attainment of Riparian Management Objectives or adversely affect inland native fish. Relocate or close recreation facilities where Riparian Management Objectives cannot be met or adverse effects on inland native fish can be avoided.

RM-2 Adjust dispersed and developed recreation practices that retard or prevent attainment of Riparian Management Objectives or adversely affect inland native fish. Where adjustment measures such as education, use limitations, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closures are not effective in meeting Riparian Management Objectives and avoiding adverse effects on inland native fish, eliminate the practice or occupancy.

RM-3 Address attainment of Riparian Management Objectives and potential effect on inland native fish in Wild and Scenic Rivers, Wilderness, and other Recreation Management plans.

Minerals Management

MM-1 Minimize adverse effects to inland native fish species from mineral operations. If a Notice of Intent indicates that a mineral operation would be located in a Riparian Habitat Conservation Area, consider the effects of the activity on inland native fish in the determination of significant surface disturbance pursuant to 36 CFR 228.4. For operations in a Riparian Habitat Conservation Area ensure operators take all practicable measures to maintain, protect, and rehabilitate fish and wildlife habitat which may be affected by the operations. When bonding is required, consider (in the estimation of bond amount) the cost of stabilizing, rehabilitating, and reclaiming the area of operations.

MM-2 Locate structures, support facilities, and roads outside Riparian Habitat Conservation Areas. Where no alternative to siting facilities in Riparian Habitat Conservation Areas exists, locate and construct the facilities in ways that avoid impacts to Riparian Habitat Conservation Areas and streams and adverse effects on inland native fish. Where no alternative to road construction exists, keep roads to the minimum necessary for the approved mineral activity. Close, obliterate and revegetate roads no longer required for mineral or land management activities.

MM-3 Prohibit solid and sanitary waste facilities in Riparian Habitat Conservation Areas. If no alternative to locating mine waste (waste rock, spent ore, tailings) facilities in Riparian Habitat Conservation Areas exits, and releases can be prevented and stability can be ensured, then:

a. analyze the waste material using the best conventional sampling methods and analyze techniques to determine its chemical and physical stability characteristics
b. locate and design the waste facilities using the best conventional techniques to ensure mass stability and prevent the release of acid or toxic materials. If the best conventional technology is not sufficient to prevent such releases and ensure stability over the long term, prohibit such facilities in Riparian Habitat Conservation Areas.
c. monitor waste and waste facilities to confirm predictions of chemical and physical stability, and make adjustments to operations as needed to avoid adverse effects to inland native fish and to attain Riparian Management Objectives.
d. reclaim and monitor waste facilities to assure chemical and physical stability and revegetation to avoid adverse effects to inland native fish, and to attain the Riparian Management Objectives.
e. require reclamation bonds adequate to ensure long-term chemical and physical stability and successful revegetation of mine waste facilities.

MM-4 For leasable minerals, prohibit surface occupancy within Riparian Habitat Conservation Areas for oil, gas, and geothermal exploration and development activities where contracts and leases do not already exist, unless there are no other options for location and Riparian Management Objectives can be attained and adverse effects to inland native fish can be avoided. Adjust the operating plans of existing contracts to (1) eliminate impacts that prevent attainment of Riparian Management Objectives and (2) avoid adverse effects to inland native fish.

MM-5 Permit sand and gravel mining and extraction with Riparian Habitat Conservation Areas only if no alternatives exist, if the action(s) would not retard or prevent attainment of Riparian Management Objectives, and adverse effects to inland native fish can be avoided.

MM-6 Develop inspection, monitoring, and reporting requirements for mineral activities. Evaluate and apply the results of inspection and monitoring to modify mineral plans, leases, or permits as needed to eliminate impacts that prevent attainment of Riparian Management Objectives and avoid adverse effects on inland native fish.

Fire/Fuels Management

FM-1 Design fuel treatment and fire suppression strategies, practices, and actions so as not to prevent attainment of Riparian Management Objectives, and to minimize disturbance of riparian ground cover and vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuel management actions could perpetuate or be damaging to long-term ecosystem function or inland native fish.

FM-2 Locate incident bases, camps, helibases, staging areas, helispots, and other centers for incident activities outside Riparian Habitat Conservation Areas. If the only suitable location for such activities is within the Riparian Habitat Conservation Area, an exemption may be granted following a review and recommendation by a resource advisor. The advisor would prescribe the location, use conditions, and rehabilitation requirements, with avoidance of adverse effects to inland native fish a primary goal. Use an interdisciplinary team, including a fishery biologist, to predetermine incident base and helibase locations during presuppression planning.

FM-3 Avoid delivery of chemical retardant, foam, or additives to surface waters. An exception may be warranted in situations where overriding immediate safety imperatives exist, or, following a review and recommendation by a resource advisor and a fishery biologist, when the action agency determines an escape fire would cause more long-term damage to fish habitats than chemical delivery to surface waters.

FM-4 Design prescribed burn projects and prescriptions to contribute to the attainment of the Riparian Management Objectives.

FM-5 Immediately establish an emergency team to develop a rehabilitation treatment plan to attain Riparian Management Objectives and avoid adverse effects on inland native fish whenever Riparian Habitat Conservation Areas are significantly damaged by a wildfire or a prescribed fire burning out of prescription.

Lands

LH-1 Require instream flows and habitat conditions for hydroelectric and other surface water development proposals that maintain or restore riparian resources, favorable channel conditions, and fish passage, reproduction, and growth. Coordinate this process with the appropriate State agencies. During relicensing or hydroelectric projects, provide written and timely license conditions to the Federal Energy Regulatory Commission (FERC) that require fish passage and flows and habitat conditions that maintain/restore riparian resources and channel integrity. Coordinate relicensing projects with the appropriate State agencies.

LH-2 Locate new hydroelectric ancillary facilities outside Riparian Habitat Conservation Areas. For existing ancillary facilities inside the RHCA that are essential to proper management, provide recommendations to FERC to assure that the facilities would not prevent attainment of the Riparian Management Objectives and that adverse effects on inland native fish are avoided. Where these objectives cannot be met, provide recommendations to FERC that such ancillary facilities should be relocated. Locate, operate and maintain hydroelectric facilities that must be located in Riparian Habitat Conservation Areas to avoid effects that would retard or prevent attainment of the Riparian Management Objectives and avoid adverse effects on inland native fish.

LH-3 Issue leases, permits, rights-of-way, and easements to avoid effects that would retard or prevent attainment of the Riparian Management Objectives and avoid adverse effects on inland native fish. Where the authority to do so was retained, adjust existing leases, permits rights-of-way, and easements to eliminate effects that would retard or prevent attainment of the Riparian Management Objectives or adversely affect inland native fish. If adjustments are not effective, eliminate the activity. Where the authority to adjust was not retained, negotiate to make changes in existing leases, permits, rights-of-way, and easements to eliminate effects that would prevent attainment of the Riparian Management Objectives or adversely affect inland native fish. Priority for modifying existing leases, rights-of-way, and easements would be based on the current and potential adverse effects on inland native fish and the ecological value of the riparian resources affected.

LH-4 Use land acquisition, exchange, and conservation easements to meet Riparian Management Objectives and facilitate restoration of fish stocks and other species at risk of extinction.

General Riparian Area Management

RA-1 Identify and cooperate with Federal, Tribal, State, and local governments to secure instream flows needed to maintain riparian resources, channel conditions, and aquatic habitat.

RA-2 Trees may be felled in Riparian Habitat Conservation Areas when they pose a safety risk. Keep felled trees on site when needed to meet woody debris objectives.

RA-3 Apply herbicides, pesticides, and other toxicants, and other chemicals in a manner that does not retard or prevent attainment of Riparian Management Objectives and avoids adverse effects on inland native fish.

RA-4 Prohibit storage of fuels and toxicants within Riparian Habitat Conservation Areas. Prohibit refueling within Riparian Habitat Conservation Areas unless there are no other alternatives. Refueling sites within a Riparian Habitat Conservation Area must be approved by the Forest Service or Bureau of Land Management and have an approved spill containment plan.

RA-5 Locate water drafting sites to avoid adverse effects to inland native fish and instream flows and in a manner that does not retard or prevent attainment of Riparian Habitat Objectives.

Watershed and Habitat Restoration

WR-1 Design and implement watershed restoration projects in a manner that promotes the long-term ecological integrity of ecosystems, conserves the genetic integrity of native species, and contributes to attainment of Riparian Management Objectives.

WR-2 Cooperate with Federal, State, local, and Tribal agencies, and private landowners to develop watershed-based Coordinated Resource Management Plans (CRMPs) or other cooperative agreements to meet Riparian Management Objectives.

Fisheries and Wildlife Restoration

FW-1 Design and implement fish and wildlife habitat restoration and enhancement actions in a manner that contributes to attainment of the Riparian Management Objectives.

FW-2 Design, construct, and operate fish and wildlife interpretive and other user-enhancement facilities in a manner that does not retard or prevent attainment of the Riparian Management Objectives or adversely affect inland native fish. For existing fish and wildlife interpretive and other user-enhancement facilities inside Riparian Habitat Conservation Areas, assure that Riparian Management Objectives are met and adverse effects on inland native fish are avoided. Where Riparian Management Objectives cannot be met or adverse effects on inland native fish avoided, relocate or close such facilities.

FW-3 Cooperate with Federal, Tribal, and State wildlife management agencies to identify and eliminate wild ungulate impacts that prevent attainment of the Riparian Management Objectives or adversely affect inland native fish.

FW-4 Cooperate with Federal, Tribal, and State fish management agencies to identify and eliminate adverse effects on native fish associated with habitat manipulation, fish stocking, fish harvest, and poaching.

3. BIG GAME

Elk summer habitat* will be given appropriate protection and managed in accordance with the following selected recommendations from the Coordinating Elk and Timber Management, Final Report of the Cooperative Elk-Logging Study, 1970-1985, January 1985 (Appendix DD).

Two components of summer elk habitat are identified. These are:

- "Moist sites," composed of specific habitat types, topographic situations, and elevations. Some of these have been tentatively mapped in the Flathead National Forest planning data base as summer habitat.
- "Security Areas," composed of areas associated with the moist sites that provide security and other necessary components of elk summer habitat.

a. "Moist sites" will be managed according to the habitat type - moist site recommendations.
b. Areas with "Moist Sites" will be managed during the elk use period, with open road densities that average 1 mile or less per square mile.
c. "Security Areas" will be managed according to the security area recommendations.
d. In both "Moist Sites" and "Security Areas", slash in managed stands will be reduced to levels that do not impede elk movement.

Restore wildland fire on winter ranges to achieve desired vegetation vigor, composition, and structure.

Prior to conducting activities designed to re-establish Large Single-story forest structure on winter ranges, assess whether modifications to retain hiding and thermal cover are necessary.

On snow-dominated winter ranges, maintain thermal cover by retaining trees of appropriate density, size, and species composition.

4. OLD GROWTH AND CAVITY-DEPENDENT WILDLIFE

Protect old growth forest consistent with vegetation standard H(6). Modify treatments as needed to meet habitat needs of old growth associated species. Moderate the timing, extent and intensity of vegetation treatments where needed to satisfy wildlife habitat requirements, limit associated human disturbance, or reduce excessive mortality risk. Maintain dead and defective trees and down logs as described in the Standards, Section H.

* Elk summer habitat, as defined above, encompasses some 30,000 acres of tentatively suitable timberland on the Flathead National Forest. Of the 30,000 acres, 6,500 are in riparian areas.

5. THREATENED AND ENDANGERED SPECIES - BALD EAGLE AND PEREGRINE FALCON

Apply the following guidance to management activities that may affect bald eagle and peregrine falcon.

a. Prohibit disturbance-causing activities such as road construction, logging, and seismic exploration using explosives within one-half mile of active bald eagle or peregrine falcon nests during the nesting period February 1 through August 1.
b. Do a biological evaluation and initiate formal consultation with the U.S. Fish and Wildlife Service prior to implementing National Forest management activities that would result in changes in vegetation (such as logging and road construction) within one-fourth mile of known active bald eagle or peregrine falcon nests.

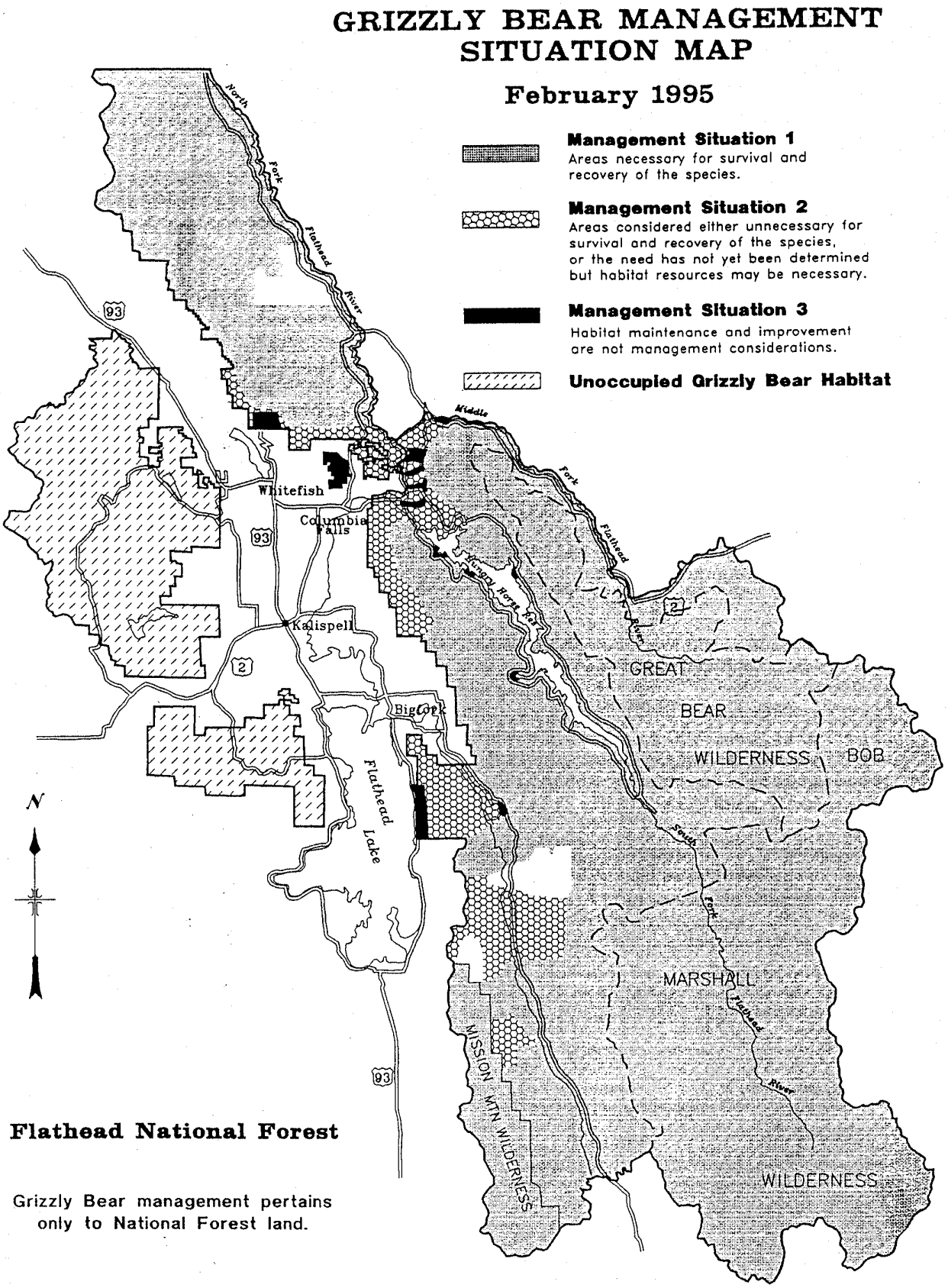
c. Do a biological investigation prior to the use of pesticides within 15 miles of an active bald eagle or peregrine falcon nest.

d. Prohibit cutting of snags for firewood within 300 feet of any river, lake, or reservoir.

e. Bald eagle habitat components (winter roosts, feeding areas and spring/fall migration routes) will be inventoried and recorded along with nests as part of all site-specific analysis.

f. The Montana Bald Eagle Management Plan and the Pacific Bald Eagle Recovery Plan provide additional direction and guidelines which will be applied during site-specific analysis. These documents are incorporated into the LRMP as unbound appendices (Appendix QQ, Montana Bald Eagle Management Plan, 1986 and Appendix RR, Pacific Bald Eagle Recovery Plan, 1987).

g. The American Peregrine Falcon Recovery Plan (Rocky Mountain Southwest Populations), 1984, provides additional direction and guidelines which will be applied during site-specific analysis. This document is incorporated into the LRMP as unbound appendices (Appendix SS, American Peregrine Falcon Recovery Plan (Rocky Mountain Southwest Populations, 1984).


GRIZZLY BEAR MANAGEMENT SITUATION MAP
February 1995
Management Situation 1
Areas necessary for survival and recovery of the species.
Management Situation 2
Areas considered either unnecessary for survival and recovery of the species, or the need has not yet been determined but habitat resources may be necessary.
Management Situation 3
Habitat maintenance and improvement are not management considerations.
Unoccupied Grizzly Bear Habitat
North Fork Flathead River
Middle Fork Flathead River
South Fork Flathead River
Whitefish
Columbia Falls
Kalispell
Big Fork
Flathead Lake
Hungry Horse Res
GREAT BEAR WILDERNESS
BOB MARSHALL WILDERNESS
MISSION MTN WILDERNESS
93
2
N
Flathead National Forest
Grizzly Bear management pertains only to National Forest land.

6. THREATENED AND ENDANGERED SPECIES - GRIZZLY BEAR

[a. deleted]

b. Management Situations and Direction

Ensure that all management activities and projects are planned, designed, and implemented in accordance with the Interagency Grizzly Bear Guidelines (Interagency Grizzly Bear Committee 1986, see Unbound Appendix OO to the Forest Plan).

c. Flathead National Forest Grizzly Bear Management Situations

Adminis	Mgmt. Sit. 1	Mgmt. Sit. 2	Mgmt. Sit. 3	Total
NF Acres	1,992,765	100,635	12,997	2,106,397
Percent of Occupied Habitat	94%	5%	1%	100%

[d. deleted]

e. Management Direction

All Management Functions, All Management Situations

(1) Maintain close contact with research organizations to ensure that current research data are being used in resource planning and administration affecting grizzlies.

At least once a year, District Rangers and biologists will meet to review current research findings and discuss their application in resource management. Review and revise guidelines as necessary to keep them current. Address research needs in terms of Forest management activities.

(2) Biological evaluations of all significant projects are required. Refer to General Standard 4, p. II-15, for direction regarding consultation with U.S. Fish and Wildlife Service.

(3) Identify and evaluate for each project proposal the cumulative effects of all activities, both existing uses and other planned projects, relative to both public and private lands.

(4) Measures to be taken to protect, maintain, and/or improve grizzly bear habitat and populations will be specified in project design.

(5) Refine Management Situation stratification based on current grizzly bear habitat suitability, population, and distribution trends. All biological evaluations will assess the current Management Situations for accuracy and provide recommendations and rationale for updating as necessary. Changes to Management Situation stratifications will be made by amending the Forest Plan.

(6) [*Moved to Objectives*]

(7) Carcasses of wildlife, livestock, or other attractants along highways, roads, and trails will be removed a distance of one-fourth mile from the roadway or otherwise made unavailable to bears. Removal should occur within 24 hours.

(8) The riparian zone is a basic component of suitable grizzly habitat. Its management will maintain grizzly bear habitat and will generally follow established guidelines within the Forest Plan.

(9) Active grizzly bear trapping sites that are not tended will be closed to other human use. Warning signs will be posted prior to installation of the trap.

(10) Contracts and permits will include a clause providing for the cancellation, suspension, or temporary cessation of activities if such is needed to resolve a grizzly/ human conflict situation. Permits for temporary onsite facilities will require that camps be located to avoid seasonally important bear habitats and contain the grizzly bear clauses developed to prevent people/bear conflict. Contractor and permittees' cooperation in meeting grizzly management goals will be attained with applicable clauses and stipulations.

(11) Operating plans and special-use permits will specify measures to be taken regarding human and domestic stock food storage and garbage disposal in grizzly bear habitat.

(12) Human access will be managed to meet grizzly bear recovery goals. When warranted, roads will be closed seasonally or yearlong, and where appropriate, area closures will be applied. On National Forest lands within each BMU Subunit, there will be no net increase in density of open motorized access routes or total motorized access routes. Forest Service activities will result in a net gain towards meeting objectives for total and open motorized access and security core areas on National Forest lands. Refer to Forest Plan Unbound Appendix TT for definitions and implementation direction.

(13) Feeding of bears will be prohibited.

(14) Areas with a history of grizzly bear/human encounters or areas with important seasonal use by bears may be closed to human use temporarily, seasonally, or yearlong in Management Situations 1 and 2.

(15) On National Forest lands within the recovery zone, garbage handling facilities will be bear-resistant.

(16) On National Forest lands within each BMU Subunit, there will be no net decrease in the size or amount of core areas that provide security. Core areas will be at least 2500 acres in size, and will be distributed to provide all seasonal habitats and elevations. Once established and effective, core areas will remain in place for at least 10 years.

(17) All land adjustment cases will be evaluated using the biological evaluation process for determining effects on the grizzly bear.

f. Guidelines

To assist land managers in meeting established goals for the grizzly bear, the following guidelines have been developed. These guidelines provide for more detailed application of the broad "Grizzly Bear Guidelines," for maintaining and improving habitat and in minimizing grizzly/human conflict potential.

It is recognized that in several areas of the Forest, such as the Swan Valley, important seasonal habitats occur that are dependent on private as well as National Forest System land. The inability of the Forest to exercise exclusive control of activities and programs that may affect the grizzly determined the Management Situation delineation. Activities and programs on Forest land will be evaluated in relation to the importance of the area to the grizzly bear.

The guidelines and the Flathead National Forest annual monitoring plan will be reviewed with the U.S. Fish and Wildlife Service and the Montana Department of Fish, Wildlife, and Parks. The annual monitoring plan will provide rationale for stated levels of implementation.

To comply with Section 7 of the Endangered Species Act, biological evaluations consistent with these guidelines will be completed prior to projects being authorized or funded. The biological evaluation will determine the potential for the proposed action to adversely affect Federally listed species and provide recommended mitigation measures.

Timber Management, Management Situations 1 and 2

(1) Timber sale project plans will include grizzly bear habitat improvement if there is a determined need to improve grizzly bear habitat in the project area or develop habitat improvement techniques, provided the timber sale and/or wildlife funds are available to accomplish the improvements.

(2) Coordinate timber sale activities in time and space so that activities occur at a time when the area has the least biological importance to the bear. Strive to concentrate activities within the shortest time period.

(3) Where feasible, even-aged harvest units should be irregular in shape. Generally these units will be limited to topography with slopes less than 35 percent where tractor yarding will be permitted. Seldom will irregular-shaped units be created on steep slopes where cable yarding and broadcast burning is the only alternative. No point within the unit can be more than 600 feet from cover.

(4) When harvest units are located adjacent to natural or manmade openings, hiding cover will be maintained on approximately 75 percent of the opening's perimeter. Minimum width of hiding cover is 3 sight distances; therefore, the minimum width of leave strips should be at least 3 sight distances.

(5) Clearcutting of stands should not occur until adjacent harvested units qualify as summer hiding cover. Sales should be planned so that repeated entries over short periods are avoided.

(6) Maintain a minimum of 40 percent cover of each project analysis area with 20 percent in summer hiding cover and 20 percent in summer thermal cover distributed throughout the area.

Long-term management of grizzly bear habitat in project analysis areas will strive for even distribution of the following successional stages (wildernesses and roadless areas excepted):

Old Growth	Mature	Immature
Pole	Shrub/Sapling	Grass/Forb/Seedling

(7) Timber sale receipts, collected for post-sale area improvement (Knudson-Vandenberg Act funds) may be used, if available, to enhance the grizzly habitat within a sale area.

(8) Consider habitat management schemes to reestablish and maintain whitebark pine as a component of suitable habitat. Additional research is needed.

Fire Management, All Management Situations

(1) Grizzlies derive much of their energy from the fruits of shrubs, including huckleberry and buffaloberry. Wildfire burns in this century are important producers of fruiting shrubs that provide grizzly food energy. Natural fire frequency appears necessary to maintain or expand burn components. Prescribed burning in habitat types that are not managed for timber production will be implemented through natural and planned ignition to approximate a natural fire frequency. Forest components known to have the greatest potential for improvement will receive priority. Additional research is needed.

(2) On all project fires the resource coordinator will evaluate ongoing and potential impacts on the grizzly.

Range Management, Management Situations 1 and 2

(1) All livestock use on allotments, including recreation horse allotments, will be evaluated by the biological evaluation process for its effect upon grizzlies and/or their habitat. Evaluation will follow the direction established for preparation and revision of allotment management.

(2) Grazing activities with potential for affecting the grizzly bear, as determined in the biological review, will be modified so as not to adversely affect the grizzly bear and its habitat.

(3) Allotment management direction will specify, when applicable, measures to protect in time and space food production areas vitally important to grizzlies (i.e., wet alpine and subalpine meadows, stream bottoms, aspen groves, and other riparian areas) from conflicting and competing use by livestock.

(4) Livestock grazing on important spring habitat for grizzlies should be deferred until after July 1.

Recreation Management, All Management Situations

(1) Outfitter/guide permits will specify measures to be taken in terms of food storage, refuse disposal, and wild meat storage. Work with Montana Department of Fish, Wildlife, and Parks on enforcement of the permit regulations.

(2) An information brochure summarizing human conduct in grizzly country will be made available to the public. A supply of the brochure will be made available to local offices of the Montana Department of Fish, Wildlife, and Parks.

(3) In Situations 1 and 2, when recreational use is determined to exceed grizzly tolerance levels as determined through biological analysis, some means of restriction or reduction of human use should be implemented.

(4) Reduce grizzly mortality illegally occurring during big-game hunting seasons by:

(a) Assisting Montana Department of Fish, Wildlife, and Parks in making information available to all hunters to assist them in distinguishing between black and grizzly bear.

(b) Assisting Montana Department of Fish, Wildlife, and Parks in issuing special warnings to hunters using areas frequented by grizzly bear.

(c) Road closures in key grizzly bear habitat.

Minerals and Special Uses, All Management Situations

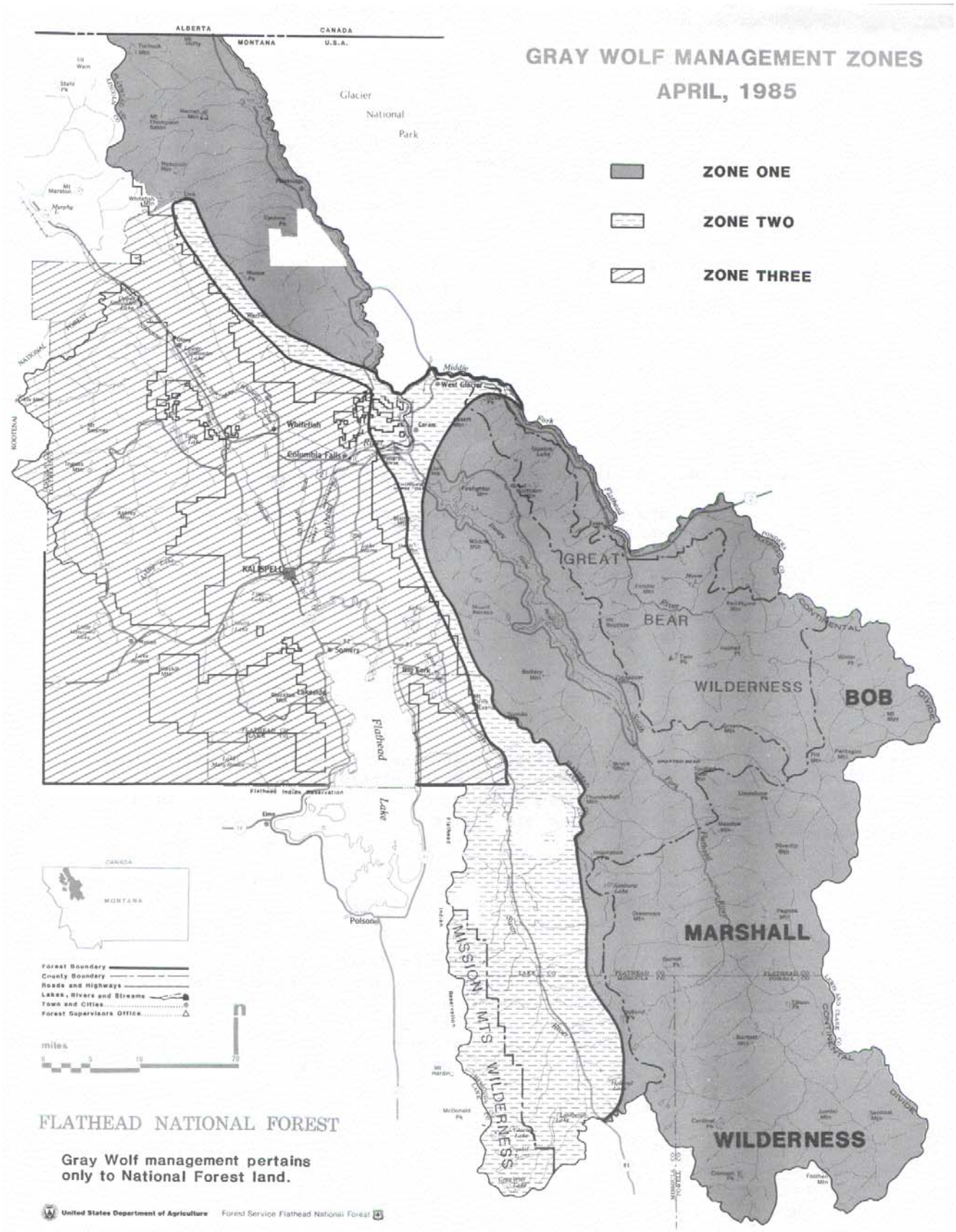
(1) All oil and gas planning, leasing, and implementing activity on the Flathead National Forest will be in accordance with the EA (Environmental Assessment), Flathead National Forest, 1980, other NEPA documents covering the portions of the Forest not covered by the 1980 environmental assessment, or other NEPA documents or processes that may be required by the current litigation challenging that 1980 EA.

(2) Scheduling of mineral exploration and other development activities will be established so as to provide security areas immediately adjacent to project analysis areas.

(3) Temporary living facilities for exploration and/or development personnel may be onsite but with restrictions as necessary. Offsite camps will be encouraged. Approved camps will include restrictions on food storage, garbage disposal, firearms, and domestic pets.

(4) Avoid superimposing activities on seasonally important grizzly bear habitats which may adversely affect the species or reduce habitat effectiveness.

(5) Establish flight patterns (corridors) in advance when activities require the use of helicopters. Flight patterns should be located to avoid seasonally important grizzly bear habitat constituent elements and habitat components during bear-use periods. In some instances altitudinal restrictions could safeguard bears as well as flight corridors.


GRAY WOLF MANAGEMENT ZONES
APRIL, 1985
ZONE ONE
ZONE TWO
ZONE THREE
ALBERTA
CANADA
MONTANA
U.S.A.
Glacier
National
Park
West Glacier
Whitefish
Columbia Falls
KALISPELL
Somers
Big Fork
Flathead
Lake
Polson
GREAT
BEAR
WILDERNESS
BOB
MARSHALL
MISSION MTS
WILDERNESS
WILDERNESS
Forest Boundary
County Boundary
Roads and Highways
Lakes, Rivers and Streams
Town and Cities
Forest Supervisors Office
miles
FLATHEAD NATIONAL FOREST
Gray Wolf management pertains only to National Forest land.
United States Department of Agriculture
Forest Service Flathead National Forest

7. THREATENED AND ENDANGERED SPECIES - GRAY WOLF

a. Wolf habitat needed to meet recovery goals includes available prey (especially elk, deer, and moose) and security. Stream and river bottoms provide important travel routes and gathering places.

b. Logging activities should not be conducted in or near the following areas at certain times of the year:
   Within 1 mile radius of known or highly suspected dens and rendezvous sites 15 March - 1 July;
   Ungulate calving/fawning areas 1 May - 15 July;
   Important ungulate winter ranges 1 December - 15 April.

   The dates and locations given may vary and should be based on the current ongoing wolf research.

c. Maintain active communications with research organizations and cooperating agencies.

d. Maintain an active public information and education program addressing wolf recovery and management.

e. *[deleted]*

f. Wolf Habitat Management Direction

   (1) Refer to General Standard 4, p. II-15, for direction regarding consultation with U.S. Fish and Wildlife Service.

   (2) Measures to be taken to protect, maintain, and/or improve wolf habitat and populations as per the biological evaluation will be specified in project design.

   (3) Identify and evaluate cumulative effects of all activities for each project proposal, including recent, current, and planned.

   (4) Maintain active communications with research organizations to ensure current research data are being used in resource planning and administration affecting wolves and their habitat. As necessary, District Rangers and biologists shall meet to review current research findings and discuss their application in resource management. Review and revise guidelines periodically to keep them current. Address research needs in terms of Forest management activities. Monitor the application of guidelines to assure they are properly and effectively used.

   (5) Refine management situation stratification based on current habitat suitability, population, and distribution trends. All biological evaluations will assess the current status of management situation stratifications for accuracy and provide analysis data and recommendations for updating as necessary.

(6) Establish an active public information and education program addressing wolf management and stressing goals, objectives, and actions required to recover the populations. Provide educational facts on wolf ecology, legal status, present population levels, and disturbance factors to Forest users through a strong I & E effort. Emphasize protective measures for allowing wolf populations to become viable. Emphasize the availability and efficiency of methods for controlling wolves where necessary.

(7) Logging activities should not be conducted in or near the following areas at certain times of the year: (a) within one mile radius of known or highly suspected wolf whelping dens and initial rendezvous sites 15 March - 1 July; (b) ungulate calving/fawning areas 1 May - 15 July; and (c) crucial ungulate winter ranges 1 December - 15 April. The dates and locations given may vary and should be based on the current ongoing wolf research.

(8) Refer to the Recovery Plan (Unbound Appendix PP) for additional wolf habitat management direction.

8. WOODLAND CARIBOU

Cooperate with the State of Montana and the U.S. Fish and Wildlife Service in further identification of the status of woodland caribou. If caribou populations are ascertained, the Forest will consider Plan amendment to assist in recovery.

9. RARE PLANTS

In cooperation with State and private organizations, conduct inventories of sensitive plants and develop Species Conservation Strategies. As part of the National Environmental Policy Act process, conduct site-specific analyses to review programs and activities, and determine their potential effect on sensitive species. The biological evaluation shall be conducted or reviewed by qualified persons as determined by the Forest Supervisor. Adverse impacts to sensitive plants or their habitats should be avoided. If impacts cannot be avoided, the significance of potential adverse effects on the population or its habitat within the area of concern and on the species as a whole will be analyzed. Project decisions will not result in loss of species viability or create significant trends towards federal listing.

Plant species of possible concern include the following which have been listed by the Regional Forester as sensitive plants on the Flathead National Forest (updated list of September, 2001):

Amerorchis rotundifolia
Astragalus lackschewitzii
Bidens beckii
Botrychium ascendens
Botrychium crenulatum
Botrychium hesperium
Botrychium montanum
Botrychium paradoxum
Brasenia schreberi
Carex chordorrhiza
Carex livida
Carex paupercula
Grimmia brittoniae
Grindelia howellii
Heteranthera dubia
Idahoa scapigera
Kalmia polifoila
Lathyrus bijugatus
Liparis loeselii
Lycopodiella inundata
Lycopodium dendroideum
Meesia triquetra
Mimulus patulus subsp. montanus
Ophioglossum pusillum

Carex rostrata
Cetraria subalpina
Collema curtisporum
Corydalis sempervirens
Cypripedium fasciculatum
Cypripedium parviflorum
Cypripedium passerinum
Diphasiastrum sitchense
Drosera anglica
Drosera linearis
Dryopteris cristata
Eleocharis rostellata
Epipactis gigantea
Erigeron lackschewitzii
Eriophorum gracile
Oxytropis campestris var. columbiana
Oxytropis podocarpa
Petasites fragilis var. nivalis
Phegopteris connectilis
Polygonum douglasii ssp austinae
Potamogeton obtusifolius
Potentilla quinquefolia
Salix barrattiana
Scheuchzeria palustris
Scirpus cespitosus
Scirpus subterminalis
Scorpidium scorpoides
Utricularia intermedia
Viola renifolia

Water howellia- *Howellia aquatilis* is federally listed as a threatened species. Conduct a biological assessment of all activities that may affect habitat of *Howellia aquatilis*. Refer to General Standard 4, page II-15, for direction regarding consultation with U.S. Fish and Wildlife Service.

Retain a forested buffer of a minimum width of 300 feet from the margins of ponds (both occupied and unoccupied) that provide *Howellia aquatilis* habitat. Avoid ground-disturbing activities within the buffer. Human-caused alteration of vegetation within the buffer should not occur unless it is consistent with natural ecological processes. No herbicides should be used within the Swan Valley watershed without prior evaluation through the biological assessment/evaluation process.

Allow aquatic and adjacent upland vegetation to recover in and around previously disturbed water howellia pond habitats (including both occupied and unoccupied).

Site-specific actions will be designed utilizing goals and objectives contained in the Conservation Strategy for *Howellia aquatilis* (unbound appendix TT)

10. SENSITIVE SPECIES

As part of the National Environmental Policy Act process, conduct analyses to review programs and activities, and determine their potential effect on sensitive species. The biological evaluation shall be conducted or reviewed by qualified persons as determined by the Forest Supervisor. Adverse impacts to sensitive species or their habitats should be avoided. If impacts cannot be avoided, the significance of potential adverse effects on the population or its habitat within the area of concern and on the species as a whole will be analyzed. Project decisions will not result in loss of species viability or create significant trends towards federal listing.

G. RANGE

1. Consider the management area objectives and dependency of the ranching community in forage management.

2. Control livestock grazing on timber cutting units as necessary to provide for tree regeneration. Livestock grazing on lands designated for timber production may be permitted under the following conditions: (1) regeneration is established, or (2) the silvicultural prescription and allotment management are specifically designed to meet regeneration goals.

3. Control livestock grazing in riparian areas to maintain water quality and fisheries habitat.

4. Management of domestic livestock grazing allotments will be consistent with management area direction.

5. Develop management direction for noxious weeds.

H. VEGETATION

1. Require silvicultural examination and prescriptions before any vegetative manipulation takes place. Exceptions include right-of-way clearing and maintenance, hazard tree removals, mineral and other special-use developments, and free-use salvage or other permits.

2. Timber sales will be designed to consider cost effectiveness while maintaining the long-term sustained yield and protecting the soil and water resources.

3. Where compatible with management area direction, enhance firewood removal opportunities by implementing the following:

   a. If soil, water, wildlife, and other vegetation concerns can be satisfied, evaluate opportunities to keep temporary roads on commercial timber sales which access firewood available for short-term public firewood extraction.

   b. Provide for slash disposal and site preparation that gives the public a reasonable opportunity to utilize logging residue as firewood. Where appropriate, require the timber purchaser to yard firewood material to roads or landings so that it is available to woodcutters.

   c. Develop a program of commercial firewood sales at a level which considers current needs and which can be maintained as part of the Forest regular sell program.

   d. Develop an information program to explain the firewood permit system. Emphasis should be directed to other uses of firewood material, such as wildlife and silviculture, as well as safety, responsibilities of woodcutters, commercial forest users, and the limits of noncommercial use.

   e. Continue emphasizing commercial utilization of non-sawlog material on commercial timber sales through available contractual provisions.

4. The Northern Regional Guide specifies utilization standards that will serve as the Flathead National Forest's minimum utilization standards.

5. Vegetation management will be guided by the Vegetation Management Practices and Habitat Type Guidelines (Appendix I), and the Northern Regional Guide.

6. Maintain or restore existing old growth consistent with Wildlife and Fish objectives and standards.
   (a) Vegetation management within old growth shall be limited to:
      (1) actions necessary to maintain or restore old growth composition and structure consistent with native succession and disturbance regimes; or
      (2) actions necessary to reduce risks to sustaining old growth composition and structure.
   (b) Vegetation management within old growth shall to the extent feasible retain old growth composition and structure consistent with native disturbance and succession regimes.
   (c) This standard does not apply to: personal-use firewood permits; tree removal to protect health and safety in administrative and recreational special use areas; tree removal necessary for trail or trailhead construction; or legally required private land access.
   (d) Road construction associated with vegetation management actions shall avoid or minimize impacts to old growth to the extent feasible.

7. In timber harvest areas other than personal-use firewood permits, tree removal to protect health and safety, or vegetation manipulation within developed recreation sites or designated special-use areas, retain sufficient vegetation structure, including large diameter trees. Consistent with native disturbance and succession regimes, provide for long-term snag and coarse woody debris recruitment; essential soil processes, including nutrient cycling and mycorrhizal functions; species habitat, including feeding and dispersal habitat for small mammals and birds; and long-term structural diversity of forest stands.

   In the absence of a site-specific prescription to achieve this standard, the following apply:

   a. Maintain a density of snags to at least the following levels in areas > 200 feet from open roads. Provide 5 live replacement trees (>12" dbh) for each large-diameter snag (>20" dbh). If existing snag densities are below the following densities, substitute live trees where possible, and document why conditions cannot be met:
      <u>Dry PVG:</u>
      2 snags average per acre 12 to 20 inches dbh
      and 1 snag average per acre > 20 inches dbh
      <u>Moist PVG:</u>
      6 snags average per acre 12 to 20 inches dbh
      and 2 snags average per acre > 20 inches dbh
      <u>Cold PVG:</u>
      6 snags average per acre 12 to 20 inches dbh
      and 1 snag average per acre > 20 inches dbh

   b. Retain coarse woody debris (woody pieces > 6 feet in length) in treatment areas at densities shown below.
      <u>Dry PVG:</u>
      15 pieces average per acre 9 to 20 inches diameter
      and 10 pieces average per acre > 20 inches diameter

Moist PVG:
32 pieces average per acre 9 to 20 inches diameter
and 15 pieces average per acre > 20 inches diameter
Cold PVG:
30 pieces average per acre 9 to 20 inches diameter
and 15 pieces average per acre > 20 inches diameter

I. WATER

The following standards are designed to protect or improve the quality of the water resource. These practices, known as BMP's (Best Management Practices), utilize the best technology available. These practices are a result of laws, regulations, and good land stewardship.

The group of practices was compiled from The Flathead Drainage 208 Project, May 1980; Flathead National Forest Hydrologic Guidelines, 1981; and other sources. Additional BMP's are listed with the descriptions of individual management areas and in Appendix Q (Landtype Guidelines). Limits listed in the State water quality standards are coordinated with BMP's.*

The Forest BMP's emphasize, but are not limited to, preventing or minimizing erosion and sedimentation: soil should be kept in its original location and water should be prevented from accumulating to cause erosion or carry large volumes of sediment to streams.

The Forest has designated riparian management areas (Management Areas 12 and 17) and nontimber producing areas where riparian ecosystems are protected. Riparian areas (or vegetative buffer strips) are summarized in Table II-4, and addressed in the Forest BMP's.

TABLE II-4 - Riparian Area Acreage Summary - Flathead National Forest

Management Areas

Non-timber producing management areas (W&SR, Wilderness, etc.)	32,500 acres
Non-productive areas of riparian management (not capable of timber production)	5,100 acres
Riparian wildlife management areas capable of producing timber but not scheduled	38,831 acres
Riparian management area that includes productive timberland using 200-year rotation scheduled timber harvest	12,580 acres
Total Riparian Area on Forest (lakes, ponds, perennial streams - exclusive of meandered water)	89,011 acres

Outlined below are the BMP's for the Flathead National Forest. These practices are currently in effect but are stated here for clarification and public reference. These Best Management Practices will be applied to project activities to ensure meeting or exceeding State water quality standards.

* Certain constituents of water may not be altered more than a specified amount from “naturally occurring.” “Naturally occurring,” according to the Montana Department of Health and Environmental Sciences means “conditions or material present from runoff or percolation over which man has no control or from developed land where all reasonable land, soil, and water conservation practices have been applied.” Reasonable land, soil, and water conservation practices are BMP’s.

1. GENERAL

a. A watershed cumulative effects feasibility analysis for projects involving significant vegetation removal is required prior to project implementation. This is to ensure that the project, considered with other activities, will not increase water yields or sediment beyond acceptable limits. Such analysis should identify opportunities, if any exist, for mitigating adverse effects on water related beneficial uses.

b. In flood plains or wetlands, as defined by Executive Orders 11988 and 11990, any activity (including roadbuilding or timber harvest) must adhere to the requirements of these two Orders.

-- The intent of EO11988 is to reduce the risk of flood loss, to minimize negative impacts of floods on human activities, and to "preserve natural and beneficial values served by floodplains."
-- The intent of EO11990 is to minimize damage to or loss of wetlands and "...preserve and enhance the natural and beneficial values of wetlands..."

2. ROAD DESIGN AND BUILDING

All roads should be designed to keep sediment production and negative impacts to water quality to a minimum.

a. A transportation document based on an interdisciplinary approach, which considers present and future uses, will be made in order to build only the roads necessary.

b. Roads will be designed so that maintenance needs are minimal.

c. Sensitive soils (soils on steep slopes, erodible soils, poorly drained soils) or mass failures (potential slump and slide areas) need to be identified and avoided or the appropriate mitigating measures applied.

d. Large road cuts and fills will be minimized in number and size or appropriate mitigating measures will be applied.

e. On very steep slopes in close proximity to streams and where the land is sensitive to erosion, road spoil will not be side cast without special mitigating measures. See Sediment Caution Zones, Fig. II-1.

f. Long, sustained road grades will be protected by erosion barriers such as rolled grades, drive-through water bars, outsloped road sections, or other measures that prevent water from eroding the road prism.

g. Any temporary or permanent road exceeding 8 percent grade will require extra consideration which may necessitate special design and mitigating measures.

h. Roads on flood plains will be built in accordance with the guidance for Sediment Caution Zones, Fig. II-1. Crossings of this flood plain will be kept to a minimum number.

i. Roads should not be built on dissected landforms such as landtype 74 because of its high sediment delivery to streams (See Appendix Q).

j. The protective vegetative cover along each side of streams will be maintained as buffer strips. These strips will be wide enough to prevent most sediment from reaching streams.

k. Machinery will not be operated in vegetative buffer strips except as necessary to install bridges, culverts, or for similar activities.

l. To the extent possible, water will be kept flowing in its original path. Water will not be diverted from one stream to another.

m. Road ditch and road surface water will be dispersed frequently with low maintenance measures and structures.

n. Roads susceptible to erosion or surface breakup should have special design or seasonal use.

o. Erosion on cuts and fills will be minimized by the use of vegetation, fertilizer, or special control measures as soon after construction as feasible.

p. Established vegetation on cuts and fills needs to be maintained.

0-40% Slopes – The caution zone for 0-20% slopes is broader than the 20-40% because the ground may be wet and soil may be fine-grained and more easily eroded on the 0-20% class.

40-60% slopes - The caution zone is relatively broad because the slope is steep and the vegetative filter may be inadequate to prevent side-cast material from reaching streams. Tail cats, main cable lines, and other logging equipment should generally be kept at least 150’ away from the stream.

Over 60% - The caution zone is broad because slopes are steep and side-cast material may move downslope into streams. Tail cats, main cable lines, and other logging equipment can be sued but generally should be kept at least 150’ away from stream channel.

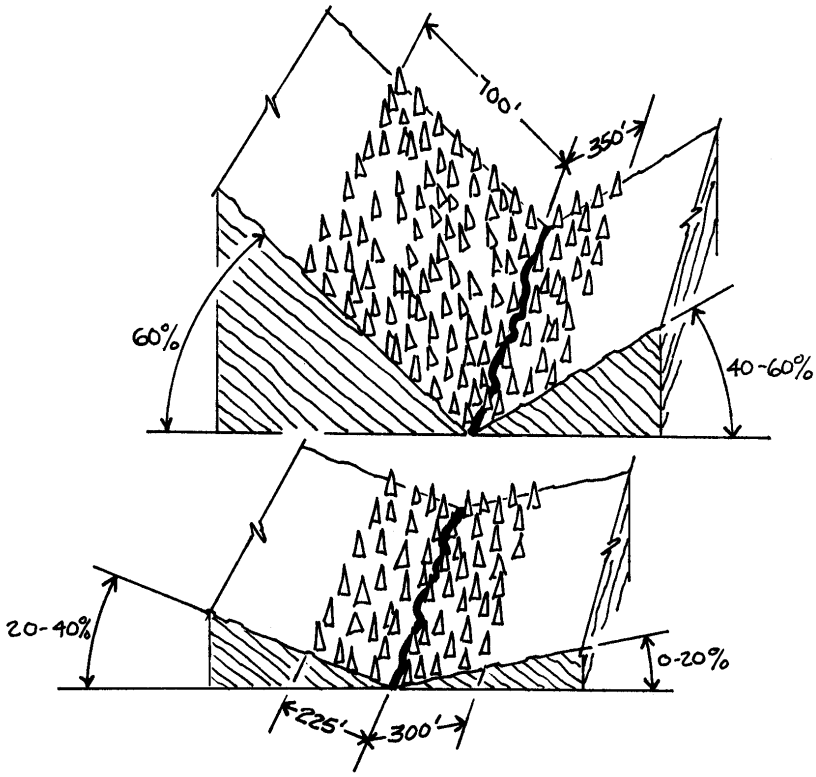


Figure II-1. Diagram of Sediment Caution Zones

3. BRIDGES, CULVERTS, AND OTHER DRAINAGE STRUCTURES

a. Surface water will be kept flowing in original channels.

b. Generally stream crossings should be made via a bridge or culvert located at natural valley constrictions where there is a narrow flood plain. At selected sites, a ford may be preferable to a bridge or a culvert.

c. Drainage structures and bridges for permanent roads should be designed to handle a 50-year flood.

d. Bridges and culverts for temporary roads will be designed large enough to handle anticipated flows during the period of use and then removed.

e. Disturbance of soil and vegetation for bridge and culvert installation will be kept to a minimum.

f. Bridge approaches will be protected from stream erosion by use of vegetation and physical means such as riprap.

g. Bridges will be designed to catch minimal amounts of floating debris.

h. Bridges will not be located in areas of active slumping or sliding.

i. Culverts that are to carry streamflow should be placed so as to minimize changes to the natural stream characteristics.

j. Culverts that carry road drainage water will be designed for efficiency and minimum maintenance of culvert, fill, and outfall area.

k. Energy dissipators, settling basins, or vegetative filters will be placed below culverts if needed to minimize the erosive impact of outfall.

4. ROAD MAINTENANCE

a. The surface of a road should be maintained by shaping it to avoid rutting and resultant accelerated erosion.

b. Do not undercut roadbanks when cleaning ditches.

c. Drainage and erosion control structures will be inspected at least yearly, preferably before spring runoff.

d. Keep the vegetative ground cover intact on road cuts and fills. Ground cover on the driving surface of low-use roads is desirable. Reestablish vegetation where needed.

e. Fertilize to maintain vegetative ground cover on cut and fill slopes.

f. Abandoned roads and trails will be erosion proofed: water bars will be installed, berms may be pulled, the raw surfaces will be revegetated. Sensitive areas should receive special treatment.

g. Pay extra attention when applying dust abatement chemicals, fertilizers, and other chemicals near live water.

h. Culverts and bridges will be kept free of debris.

i. Newly eroded places in roads, road ditches, and around culverts or bridges will be repaired as soon as possible.

5. TIMBER HARVEST

Timber harvest, as well as roadbuilding, in all watersheds requires special considerations to maintain water quality. Effects in low-order drainages are more pronounced.

a. Keep logging debris out of streams and other water bodies. Removal of existing debris requires special considerations.

b. Trees should be felled away from streams.

c. Trees will not be yarded across streams without special techniques.

d. Logging in sensitive areas requires special considerations and mitigating measures.

e. Generally skid trails will not be placed in vegetative buffer strips.

f. Buffer strips of vegetation will be maintained along each side of a stream. (See Chapter III, Management Areas 12 and 17).

g. Trees can be removed from riparian areas and streamsides with special techniques and mitigating measures.

h. Skid trails or logging corridors will be located and constructed in such a way as to avoid concentrating runoff.

i. All disturbed lands should have erosion control measures applied: water bars, cross drains, and outslopes. These will be installed before seasonal rains or snowmelt.

j. Seed and fertilizer will be applied to landings, skid trails, and firelines as needed.

k. Tractor skidding generally will not be done on slopes over 40 percent.

l. Generally logs will not be decked near streams.

m. Logging will not be done in areas sensitive to soil compaction or erosion without special considerations and mitigating measures.

6. SITE PREPARATION

Site preparation prescriptions will include silvicultural objectives, soil concerns, and water quality.

7. HIKING, HORSE, NATURE, CROSS-COUNTRY SKI, AND SNOWMOBILE TRAILS

Hiking, horse, and nature trails should be located, designed, built, and maintained in such a way as to minimize adverse impacts on trails, the soil resource, and water quality.

8. PICNIC AREAS, CAMPGROUNDS, AND PACKER CAMPS

Picnic areas, campgrounds, and packer camps will be located, designed, built, and maintained to minimize adverse impacts on water quality.

Provisions for disposal of garbage and human wastes will be made as appropriate.

9. WATERSHEDS USED FOR COMMUNITY WATER SUPPLIES (MUNICIPAL)

In addition to the previous BMP's, the specific direction found in FSM 2543 will be applied. A listing of the community water supply watersheds on the Flathead National Forest is also found in this manual.

J. SOILS

1. Ensure that all resource management activities will maintain soil productivity and minimize erosion through implementation of:

    a. The management direction presented in the Landtype Guidelines (Appendix Q).

    b. Erosion Prevention Standards (Engineering Handbook Supplement).

    c. Tally Lake Ranger District Technical Guide - Soil Compaction.

2. Design or modify all management practices as necessary to protect land productivity.

K. MINERALS

The following standards will guide the Flathead National Forest in managing lands for mineral resources:

1. Except for Congressional restrictions, all lands shall remain open for exploration and development unless administrative action is justified in the National interest.

2. The Forest will encourage responsible development of mineral resources on National Forest System lands by private industry in a manner that satisfies National and local needs and provides for economically and environmentally sound exploration, extraction, and reclamation.

3. Stipulations which are displayed in Appendix O and which are based on the Environmental Assessment for Oil and Gas Leasing of Nonwilderness Lands on Flathead National Forest, 1980, will be recommended in accordance with the management area direction in Chapter III. Before action is recommended on any lease application, additional site specific analysis of environmental effects will be done.

4. Mineral and energy exploration and development proposals will be processed in a timely manner.

5. Multiple use management decisions will recognize that mineral exploration and development can usually occur concurrently or sequentially with other resource uses.

6. Management direction will reflect geology, energy, and mineral values on National Forest System lands through effective mineral resource data assessment.

7. Areas withdrawn from mineral entry shall be reviewed in accordance with the Federal Land Policy and Management Act of 1976 and subsequent Bureau of Land Management and Forest

Service requirements. A listing of all withdrawals, review dates, and review criteria is provided in Appendix P.

L. LANDS

1. LAND USES

a. Allow only those uses of National Forest System land that cannot be reasonably placed on private land.

b. Generally approve special-use permits only when they do not conflict with National Forest goals and public values, and they comply with the intent of the specific management area affected.

c. To determine if a special-use proposal can be approved, an environmental analysis will be required, except where existing approved site plans and environmental analyses have been prepared; i.e., electronic sites. For some special-use proposals, the environmental analysis will include other existing or potential sites and will project future uses. Cost reimbursement may be required for major Forest Service involvement in the review, authorization, construction, and maintenance phases of some proposals and permits.

d. Districts may use letters of permission to regulate special activities not requiring a special-use permit.

e. Access - Access by road permits, road-use permits, USDA easements, or existing Memorandum of Understanding are covered in the Regional Land Access Policy, FSM 2703, R-1 Supplement No. 47 and 2730.

f. Subdivisions - District Rangers will work closely with city/County planning and zoning organizations when proposed subdivisions affect National Forest resources. Early input into development plans are needed to minimize potential problem areas such as: access, garbage disposal, utilities, water systems, sewage disposal, TV and/or radio antennas, boundary line accuracy, fencing, covenants, fire hazards, and visual problems.

As subdivisions develop, requests for individual use will be discouraged in favor of group or community requests. Initial individual (developer) permits will be phased out and incorporated in community permits.

g. Subdivision Roads - Interior subdivision roads will rarely be allowed on National Forest System lands. One access road per subdivision or original homestead is usually sufficient. Roads used for residential purposes, including those on National Forest land, should be built to County road standards by the developer and deeded to the county.

h. Powerlines and Telephone Lines - All new distribution lines, service drops, and telephone lines will be buried when possible. Exception for service and distribution may be made in cases of intermingled land, where lines cross a small corner of National Forest System land, or where burying lines may cause excessive environmental impacts; e.g., in swampy areas.

i. Water Systems - National Forest System lands will be considered as a water source where water cannot be obtained on private land. Community or group requests will be encouraged whenever a future need is recognized. Rarely will permits be granted for new domestic water sources from other than drilled wells.

j. Sewer System - Generally, private sewer systems will not be permitted on National Forest System lands.

k. Garbage Disposal - At the present time, garbage disposal on National Forest System land is not allowed because need can be met on private land. In the future, because of energy conservation needs, this position may have to be reconsidered. Garbage collection sites may be permitted if there are no unacceptable conflicts with other resource values.

l. TV or Radio Antennas - Only one antenna site or system per subdivision will be allowed.

m. Electronic Sites - Policy is to minimize the number of sites. Group uses will be encouraged to minimize the number of structures. Primarily because of electronic incompatibilities (power and frequency) between users, aggravated by congestion on the Forest's two principal electronic sites (Big Mountain and Black Tail Mountain), it is recognized that additional mountain top sites may need to be developed in the future. New sites may also be necessary to provide broadcast coverage to areas that are blind to existing transmitters and receivers.

   Possible sites needed cannot be specifically identified at this time, but development would most likely be in areas designated as roadless recreation. Sites high in electronic potential, that provide the most cost effective opportunities for year-round access and commercial electricity, will be the most desirable for development. If this becomes necessary, the Forest will do a complete environmental analysis to preclude adverse impacts.

n. Occasional Events - Handle requests such as for cross-country ski or snowmobile races, youth or church organization outings, and recreation trails on a case-by-case basis. Do not allow permanent structural facilities to be built or permit use where unacceptable resource damage could occur.

o. Commercial Recreation Developments and Major Facilities - Handle these on a case-by-case basis.

p. Gravel Permits - Where possible, confine public use to existing pits. Heavy use may require controls on use either by Forest Service administration or by private permittees who have a permit to sell gravel. If commercial sources are nearby, do not issue a permit to the public that may be in competition with private sources. In developing new pits, consider all potential uses and controls needed at the pit such as fences, gates, and site rehabilitation.

q. Topsoil - Topsoil removal will not be allowed.

r. Occupancy Trespass - Phase out all nonconforming uses. Innocent trespass of long standing may be authorized by special-use permit. If it is a use normally permitted; e.g., a water transmission ditch, issue a regular permit. The difficulty of moving will have a bearing on the phase-out period. Moveable items such as some cabins or fences will be phased out over

a maximum period of 5 years. Deliberate trespass will be phased out within a 2-year period by a short-term permit or legal action.

s. No new summer homesites will be approved. Maintain special-use permits for the existing ones.

t. Disposal of solid waste by Forest Service administrators and their assignees will be done in accordance with State and Federal Disposal Standards.

u. Ensure that all sanitary facilities, Forest Service administered or those under permit, will meet State and Federal standards.

v. Evaluate utility corridors that are in addition to those existing or known as of September 30, 1982, through an environmental analysis and appropriate documentation.

2. LAND ADJUSTMENTS

a. Ensure consistency between all landownership adjustments, management direction, and guidelines in land ownership adjustment schedules.

b. Coordinate land adjustment planning with other agencies such as Glacier National Park, Montana Department of Fish, Wildlife, and Parks, Department of State Lands, and local government.

c. Where possible, balance the acreage of Federal and non-Federal lands to be exchanged within the same County in order to minimize effects on the 25 percent fund and other payments-in-lieu-of-taxes.

d. Generally, acquire or exchange fee interest in land. Minimize reservations by the United States and accepting reservations by the grantor.

e. Ensure that land exchanges consist of no more than four to six individual tracts on each side of the exchange.

f. Give emphasis to acquiring remote, isolated, privately owned tracts when intensive subdivision and development of these lands could reduce management options on surrounding National Forest System lands.

g. Utilize donated interests in land whenever possible to meet National Forest management objectives.

h. Work with the County officials to implement comprehensive planning and zoning to meet National Forest objectives.

i. Generally maintain the checkerboard landownership pattern in the Swan Valley except where an environmental analysis indicates an ownership change is needed to respond to public issues or management concerns. Give priority to acquisition of Plum Creek Timber Company, Inc., lands in the Glacier Slough area.

j. Emphasize acquisition of land and interests in land by purchase, exchange, or donation to allow full access to all Flathead National Forest recreation areas and commercial timberland areas.

k. Emphasize acquisiton of all remaining Flathead Wild and Scenic River access sites.

l. Emphasize acquisition of trailhead facility sites and trail right-of-ways, especially along the Mission Mountains Wilderness.

m. Wherever possible, trade timberland for timberland. Old growth values are one factor that must be considered in determining whether a proposed exchange is in the public interest.

n. Give special emphasis to preserving Wild and Scenic River values on the Flathead River through donations, exchanges, and purchase. Also consider emphasizing county zoning and self-imposed landowner covenants to protect river values.

M. FACILITIES

1. Provide a cost effective program of maintenance to necessary administrative facilities. This will protect the investment, provide for public and employee's health and safety in accordance with current building codes and standards, and present a neat, well kept appearance in harmony with its surroundings.

2. Construct new administrative facilities to replace existing structures that are no longer cost effective to maintain or expand or are inadequate to serve the needs of resource management.

3. Establish road design criteria through an interdisciplinary approach and document design criteria in an Area Transportation Document. Information developed for the following items will constitute the design criteria:

   a. Management Area direction and schedule of activities.

   b. Environmental constraints (including wildlife needs, visual objectives, soils, watershed, etc.) consistent with the management area direction.

   c. Safety (indicating need for design elements such as shoulders and turnouts) versus traffic control.

   d. Physical site factors (such as sideslopes, control points and soils).

   e. Traffic requirements (including vehicle or equipment type, traffic volume, season of use, etc.).

   f. Traffic service levels (see Table II-5).

   Transportation planning will meet Forest-wide and management area goals with the minimum miles of new roads.

TABLE II-5 - Traffic Service Needs/Traffic Service Levels - Flathead National Forest				
Traffic Service Needs	Traffic Service Levels			
	A	**B**	**C**	**D**
FLOW	Free flowing with adequate passing facilities	Congested during heavy traffic such as during peak logging or recreation activities.	Interrupted by limited passing facilities, or slowed by the road condition.	Flow is slow or may be blocked by an activity. Two-way traffic is difficult and may require backing to pass.
VOLUMES	Uncontrolled; will accommodate the expected traffic volumes.	Occasionally controlled during heavy use periods.	Erratic; frequently controlled as the capacity is reached.	Intermittent and usually controlled. Volume is limited to that associated with the single purpose.
VEHICLE TYPES	Mixed; includes the critical vehicle and all vehicles normally found on public roads.	Mixed; includes the critical vehicle and all vehicles normally found on public roads.	Controlled mix; accommodates all vehicle types including the critical vehicle. Some use may be controlled to minimize conflicts between vehicle types.	Single use; not designed for mixed traffic. Some vehicles may not be able to negotiate. Concurrent use between commercial and other traffic is restricted.
CRITICAL VEHICLE	Clearances are adequate to allow free travel. Overload permits are required.	Traffic controls needed where clearances are marginal. Overload permits are required.	Special provisions may be needed. Some vehicles will have difficulty negotiating some segments.	Some vehicles may not be able to negotiate. Loads may have to be off-loaded and walked in.
SAFETY	Safety features are a part of this design.	High priority in design. Some protection is accomplished by traffic management.	Most protection is provided by traffic management.	The need for protection is minimized by low speeds and strict traffic controls.
TRAFFIC MANAGEMENT	Normally limited to regulatory, warning, and guide signs and permits.	Employed to reduce traffic volume and conflicts.	Traffic controls are frequently needed during period of high use by the d9omianant resource activity.	Used to discourage or prohibit traffic other than that associated with the single purpose.
USER COSTS	Minimize; transportation efficiency is important.	Generally higher than “A” because of slower speeds and increased delays.	Not important; efficiency of travel may be traded for lower construction costs.	Not considered.
ALIGNMENT	Design speed is the predominant factor within feasible topographic limitations.	Influenced more strongly by topography than by speed and efficiency.	Generally dictated by topographic features and environmental factors. Design speeds are generally low.	Dictated by topography, environmental factors, and design and d critical vehicle limitations. Speed is not important.
ROAD SURFACE	Stable and smooth h with little or not dust, considering the normal season of use.	Stable for the predominant traffic for the normal use season. Periodic dust control for heavy use or environmental reasons. Smoothness is commensurate with the design speed.	May not be stable under all traffic or weather conditions during the normal use season. Surface rutting, roughness, and dust may be present, but controlled for environmental or investment protections.	Rough and irregular. Travel with low clearance vehicles is difficult. Stable during dry conditions. Rutting and dusting controlled only for soil and water protection.

Arterial roads are generally classed as Service Levels A or B. Collector roads are generally classed as Service Levels B or C. Nearly all of the new roads remaining to be constructed will be locals and will generally fall into Service Levels C or D.

The information developed for the above items is used in establishing design standards for various road elements of travelway width, grade, drainage, and surfacing. It will also set management direction for traffic control and maintenance levels. A Project Development Report will be prepared documenting the selections of final design standards and elements for individual road segments.

4. Miles of existing "open" roads on a yearlong or seasonal basis will generally not increase above current "open" mileage.

   The main emphasis for design of the approximately 2,700 miles of local roads remaining to be constructed will be to minimize the amount of soil disturbance through rolling grades and curvilinear alignment, as compatible with planned logging methods.

   The significant design elements as applied to local roads will be as follows:

   a. Travelway - Local roads will generally be single lane, 12 to 14 feet wide (exclusive of curve widening, fill widening, and turnouts) to accommodate conventional logging systems. These widths will normally accommodate all other vehicular use with the exception of unconventional logging systems and some oil and gas equipment.

   b. Grades - Maximum sustained grade will generally be 8 percent. Pitches in excess of 8 percent will be necessary in steep benchy terrain to reach logging system and other physical control points. Sustained grades in excess of 8 percent will be specifically evaluated in the Area Transportation Document for impact on haul, logging system design, soils, and drainage.

   c. Drainage - Control of road surface drainage will be emphasized. Erosion control measures such as ditches, cross drains, culverts, drain dips, outsloping, and rolled grades will be utilized as needed.

   d. Surfacing - Native soil or aggregate surfaces will be provided as determined by soil support capability, erosion potential, traffic type and volume requirements. Surfacing will not be used to provide user comfort.

   e. Alignment - Alignment will respond to topographic features and environmental limitations rather than design speed.

   f. Safety Features - Turnouts, stopping sight distance, and signing will be provided as needed for user safety.

   g. Economics - All the above design elements will be coordinated to arrive at overall road designs which serve projected traffic requirements at the lowest total cost (considering initial construction, maintenance, and user needs) consistent with environmental protection and safety requirements.

5. The intent of the road management program will be to provide the greatest possible level of public access commensurate with promoting public safety, protecting resources, and minimizing user conflicts. Comprehensive reviews of proposed restrictions will ensure that no more are imposed than necessary, and that a balanced approach in managing motorized vehicles is achieved.

   To assure wildlife security needs within the different Geographic Units, unrestricted road density requirements have been established (refer to Table II-6).

   The intent of the Forest Travel Planning Direction (Appendix C) is that Flathead National Forest roads are open to motorized use unless designated closed or restricted. This direction uses four categories of closures or restrictions along with reasons for the restrictions and the criteria used. The Forest Visitors Map will be reviewed periodically and updated as necessary.

6. Road maintenance will be accomplished to the minimum level commensurate with vehicular use and facility and resource protection. Maintenance levels for any specific road will vary over time and be dependent upon functional use, design standards, development activity, and traffic service level. Over 90 percent of Forest roads will be in maintenance levels 1 through 3 with less than 10 percent in levels 4 and 5.

Road maintenance levels are as follows:

Level 1 - This level is basic custodial care as required to protect the road investment and to keep damage to adjacent land and resources to a minimum.

Level 2 - This level is used on roads where management requires that the road be open for limited passage of traffic. Traffic is normally minor, less than 15 ADT (Average Daily Traffic), usually consisting of administrative uses, permitted use, or specialized traffic. Level 2 requires the basic care of level 1 plus logging out, brushing out, and restoring road prism as necessary to provide passage. Also, route markers and regulatory signs are to be in place and useable.

Level 3 - This level is used on roads which are opened for public traffic and generally applies when use does not exceed 15 ADT. The road is to be maintained for safe and moderately convenient travel suitable for passenger cars. Route markers and regulatory signs are to be in place and useable.

Level 4 - This level generally applies when use of a road is between 15 and 100 ADT. At this level, consideration is given to the comfort of the user. These roads are frequently surfaced with aggregate material, but some routes may be paved because of limited aggregate sources and surface replacement cost factors. Route markers and regulatory signs are to be in place and useable.

Level 5 - This level is generally maintained for use of 100 ADT and greater. Roads in this category include both paved and aggregate surfaces. Safety and comfort are important considerations. Abrupt changes in maintenance on adjacent sections of road will be posted to warn travelers until deficiencies are corrected. Route markers and regulatory signs are to be in place and useable.

TABLE II-6 - Unrestricted Road Density Requirements By Geographic Unit

Geographic Unit	Density Requirement (Avg. Miles/Section)
Swan Lake Ranger District	
Lower Swan Geographic Unit	*
East Shore Geographic Unit	*
Noisy Face Geographic Unit	*
Island Geographic Unit	2.0 to 3.2
Upper Swan Geographic Unit	*
Spotted Bear Ranger District	
Spotted Bear River Geographic Unit	*
South Fork Geographic Unit	*
Bunker Creek Geographic Unit	*
Sullivan Creek Geographic Unit	*
Tally Lake Ranger District	
Upper Whitefish Geographic Unit	*
Whitefish Geographic Unit	*
Olney-Martin Creek Geographic Unit	1.3 to 1.8
Upper Good Creek Geographic Unit	1.3 to 1.8
Sylvia Lake Geographic Unit	1.3 to 1.8
Star Meadow-Logan Creek Geographic Unit	1.8 to 2.2
Tally Lake-Round Meadow Geographic Unit	1.8 to 2.2
Mountain Meadow-Rhodes Draw Geographic Unit	1.8 to 2.2
Upper Griffin Geographic Unit	2.0 to 3.2
Ashley Lake Geographic Unit	2.0 to 3.2
Hungry Horse Ranger District	
Bear Creek-Challenge Cabin Geographic Unit	*
Middle Fork Geographic Unit	*
Lake Five-Desert Mountain Geographic Unit	*
Emery Creek Geographic Unit	*
East Side Geographic Unit	*
West Side Geographic Unit	*
Columbia Mountain Geographic Unit	*
Glacier View Ranger District	
Trail Creek Geographic Unit	*
Whale-Coal Geographic Unit	*
Big Creek Geographic Unit	*
Canyon-Teakettle Geographic Unit	*
North Fork Valley Geographic Unit	*

* Road management direction from the Forest-wide standards for grizzly bear management will apply. Any added security needs will be determined during the project analysis (See standard 16 on page II-30).

The Forest Road Maintenance Schedule will be prepared annually to respond to operational and road use needs and objectives.

7. Provide that all roads are planned and designed to re-establish vegetative cover on the disturbed area within a reasonable period of time, not to exceed 10 years after the termination of a contract, lease or permit, unless the road is determined to be necessary as a permanent addition to the National Forest Transportation System (36CFR 219.27(a)(11).

N. AIR

Coordinate all Forest Service management activities to meet the requirements of the State Implementation Plan, State Smoke Management Plan, and Federal air quality standards.

O. FIRE MANAGEMENT

1. Fire mangement will follow the Federal Wildland Fire Management Policy through the development of a fire management plan. The fire management plan will provide geographically specific direction for fire use to meet land management objectives through the use of natural fire starts and planned ignitions.

2. Fire management resources will be developed and organized in a manner that is cost effective and commensurate with public safety and protection of private property, as well as being sensitive to public resource values and goals.

3. Prescribed fire management may include the use of planned and unplanned ignitions to meet specific land management objectives. Fire management strategies in the Bob Marshall and Great Bear Wilderneeses will be in accordance with the Wilderness Fire Plan, Phase II, for the Bob Marshall and Great Bear Wildernesses (Appendix LL), and will become part of the Forest's Fire Management Action Plan. Prescribed fire direction may be developed for other similar areas that are designated as wilderness or unroaded dispersed recreation.

4. Prescribed fire objectives will be conducted under constraints established by the Montana Airshed Group's Memorandum of Understanding. Air quality will be maintained at adequate levels as described by State, County, and Federal direction. All prescribed burns conducted on Flathead National Forest land will be governed by this direction and meet this objective.

5. *[Deleted]*

6. Provide appropriate protection to threatened and endangered plants and their habitat during fire management activities, including prescribed natural fires, planned ignitions, and fire suppression. In particular, retardant drops and fire line construction should be avoided near water howellia habitat, and water howellia ponds should not be considered as water sources for helicopter bucket operations.

P. INSECT AND DISEASE

1. Consider integrated pest management strategies in project analysis and design. Project silvicultural prescriptions will emphasize treatments that reduce losses due to insects and/or disease.

2. Pesticides (including herbicides) will be recommended for application only if the environmental analysis indicates that alternative is clearly superior to other alternatives, that the review and approval process has been completed, and that short-term and/or long-term risks to human health and safety are negligible according to available scientific evidence.

Q. LAW ENFORCEMENT

Support achievement of management direction through enforcement of laws and regulations.

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III. Management Area Direction

The National Forest land within the Flathead National Forest boundary has been divided into 22 MA's (Management Areas), each with different management goals, resource potential, and limitations. Some MA's are given separate designations by letter where a variation in management direction is needed (i.e., MA's 2, 2A, and 2B). The management areas are shown on the accompanying map, which can be used for reference. Large scale (1"/mile) maps which show MA boundaries in detail are on file in the Forest Supervisor's Office.

Except for those Congressionally or Administratively established boundaries, the management area boundaries are not firm lines and do not always follow easily found topographic features, such as major ridges. The boundaries represent a transition from one set of opportunities and constraints to another with management direction established for each. The boundaries are flexible to assure that the values identified are protected and to incorporate additional information gained from further on-the-ground reconnaissance and project level planning.

The Forest-wide management direction included in Chapter II of this Plan applies to all management areas.

Chapter III describes each management area, sets the goals, and provides the management standards by resource or activity. A schedule of management practices, and the monitoring requirements for each area are also included.

Portions of some MA's are being recommended for wilderness. Proposed wildernesses are shown on the accompanying management area map and the geographic unit maps in Chapter IV. Until Congress reaches a decision, areas recommended for wilderness will be managed to maintain all wilderness values. If not classified by Congress, these proposed wildernesses will revert to the underlying MA designation and will be managed as outlined in this chapter.

Acreages and timber suitability are listed by Management Area in Table III-1 at the end of this chapter.

MANAGEMENT AREA 1

DESCRIPTION	Management Area 1 (42,869 acres*) consists of nonforest lands and timberlands where timber management is uneconomical or currently technologically infeasible due to topographic features.
GOALS	Maintain the present condition with minimal investment for resource activities, while protecting the basic soil, water, and wildlife resources. Generally, these areas will retain a natural appearance. In areas recommended for wilderness, maintain all wilderness values until Congress reaches a decision on wilderness additions. Total proposed wilderness within this Management Area is 916 acres.
STANDARDS	In addition to the Forest-wide Management Direction included in Chapter II of this Plan, the following standards will apply to this Management Area:
<u>Water</u>	1. Maintain long-term water quality to meet or exceed State water quality standards. To ensure meeting these standards, surface-disturbing activities will be monitored where this need is identified. 2. Refer to the Forest-wide standards under Water and Soils for Best Management Practices, Landtype Guidelines, and standards applicable to projects or activities within this Management Area. 3. All project proposals will be analyzed and evaluated to determine the potential water quantity and quality impacts. Mitigation measures will be developed to minimize adverse effects.
<u>Recreation</u> Trails	1. Trail construction is allowed to access and meet adjacent Management Area objectives. Trail closures will be implemented where necessary to meet objectives of adjacent Management Areas and/or to prevent resource or trail damage.

* Includes proposed wilderness acres.

Management Area 1

Wilderness	1. No action can occur in recommended wildernesses which will reduce the areas' wilderness attributes until Congress has made a decision on wilderness classification or otherwise specified how these areas will be managed.
Timber	1. Lands are classified as unsuitable for timber management, and timber harvest will not be scheduled.
	2. Removal of timber salvage, firewood, and other forest products may occur where opportunities exist.
Facilities	
Roads	1. Road construction is allowed to meet adjacent management area objectives. Road closures will be implemented where necessary to meet objectives for adjacent management areas and/or to prevent resource or facility damage.
Wildlife and Fish	1. Adhere to the Forest-wide standards for grizzly bear management in occupied grizzly bear habitat.
Protection	
Fire Suppression	1. Follow Forest-wide standards for fire management and refer to Fire Management Direction in Appendix G.
	2. The appropriate suppression response will be based on minimal investment. Unplanned ignition prescribed fire procedures may be implemented on completion of site specific plans to enhance designated resource values.
Insect and Disease	1. No suppression of insect and disease would occur unless adjacent resource values are threatened.
Minerals	1. Exploration and development activities allowed under the mining laws, Mining Act Use Regulations, and the Mineral Leasing Act will be in accordance with approved permits and plans of operation.
	2. Oil and Gas lease stipulations will be applied within this Management Area by landtype as stated in the Landtype
	Guidelines (Appendix Q). Special stipulations may be necessary for certain activities because of the management goals for this area (refer to AFFECTED ENVIRONMENT, EVALUATION CRITERIA in Appendix O).

Management Area 1

Visual Quality	1. VQO's (Visual Quality Objectives) for this Management Area are not specified. VQO will largely be determined by the adjacent management areas.
Lands	1. These lands are not excluded from or need not be avoided by utility corridors (see Corridor Planning, Appendix J).

Schedule of Management Practices (Average Annual Amount)

No management practices are scheduled.

Monitoring and Evaluation Requirements

The monitoring requirements from Chapter V that are applicable to this Management Area are: 1, 2, 5, 8, 10, 13, 14, 16-25, 38, 48, 53, 54, and 57-59. The procedure outlined in Chapter V will be followed to evaluate the data gathered during monitoring.

MANAGEMENT AREAS 2, 2A, 2B, 2C, 2F [*2D and 2E changed to 3A per Amendment 22*]

DESCRIPTION

The following Management Areas consist of unroaded lands that offer a variety of dispersed recreation opportunities.

Management Area 2 (62,599 acres*) consists of unroaded lands suited for dispersed recreation that meet the ROS (Recreation Opportunity Spectrum) classification of primitive.** This Management Area includes portions of the west face of the Swan Range from the southern Forest boundary north to and inclusive of the Lion Creek drainage. This Management Area also includes portions of the upper Spotted Bear River area (on the Spotted Bear Ranger District) and the Le Beau area (on the Tally Lake Ranger District).

Management Area 2A (107,203 acres*) consists of unroaded lands suited for dispersed recreation that meet the ROS classification of semiprimitive nonmotorized.** This Management Area occurs throughout the Forest and includes the Whitefish Divide and several other alpine ridges. It also includes Glacier Slough on the Swan Lake Ranger District.

Management Area 2B (118,079 acres*) consists of unroaded lands suited for dispersed recreation that meet the ROS classification of semiprimitive motorized.** This Management Area occurs throughout the Forest. It includes portions of the high elevation lands of the Swan Range north of the Lion Creek drainage.

Management Area 2C (8,934 acres) consists of lands suited for dispersed recreation that meet the ROS classification of roaded natural appearing.** This Management Area is mostly located on the Tally Lake Ranger District.

Management Area 2F (260 acres) consists of lands suited for dispersed recreation. This area was included within the original boundary of the candidate LeBeau Research Natural Area, but after further evaluation was excluded from the proposed RNA. The area meets the ROS classification of semiprimitive motorized.** Management will be guided by direction provided for Management Area 2B [Amendment 22].

Management Area 2

GOALS

2 through 2F	Provide a variety of primitive and semiprimitive recreation opportunities. This Management Area will provide wildlife and fish habitat, including security from human disturbance.
2	In areas recommended for wilderness, maintain all wilderness values until Congress reaches a decision on wilderness additions. Total proposed wilderness within this Management Area is 916 acres. Dispersed recreation opportunities will be managed to meet the primitive ROS classification. In areas recommended for wilderness, maintain all wilderness values until Congress reaches a decision on wilderness additions. Total proposed wilderness within this Management Area is 44,709 acres.
2A	Dispersed recreation opportunities will be managed to meet the semiprimitive nonmotorized ROS classification. In areas recommended for wilderness, maintain all wilderness values until Congress reaches a decision on wilderness additions. Total proposed wilderness within this Management Area is 15,354 acres.
2B, 2F	Dispersed recreation opportunities will be managed to meet the semiprimitive motorized ROS classification. In areas recommended for wilderness, maintain all wilderness values until Congress reaches a decision on wilderness additions. Total proposed wilderness within this Management Area is 9,054 acres.
2C	Dispersed recreation opportunities will be managed to meet the roaded natural appearing ROS classification.
STANDARDS	In addition to the Forest-wide Management Direction included in Chapter II of this Plan, the following standards will apply to this Management Area:

* Includes proposed wilderness acres.
** See Appendix A for definitions of the ROS system classifications.

Management Areas 2-2C, 2F

The specific management direction for Research Natural Areas, including research activities will be incorporated as Forest Plan amendments upon establishment of the RNA.

Recreation

2 through 2C

1. Maintain existing facilities such as trails, trailheads, toilets, hitch racks, stock ramps, registration boxes, and informational signs.

2. Consider the Management Area's ROS classification in determining trail maintenance levels.

2

1. In the Swan Face portion of Management Area 2, high priority trail maintenance is emphasized for those trails that provide access to the Bob Marshall Wilderness (see Appendix D).

2. Additional permanent outfitter base camps will not be permitted.

3. Maintain trails for nonmotorized use. Permit the use of motorized equipment only for trail maintenance, area administration, and emergency situations.

4. Consider additional facility development to prevent resource damage only. At that point, consider development of primitive campsites and facilities (e.g., brush out and level spots, toilets, and fire rings).

2A

1. Maintain trails for nonmotorized use.

2. Develop additional trails where feasible to expand recreation opportunities (e.g., loops and tie-ins to campground complexes).

3. In the Glacier Slough portion of this management area, do not consider additional facility development unless use grows to the point where resource damage occurs. At that point, consider development of primitive campsites and facilities. Permit but do not encourage motorized public access. If conflicts develop between motorized and nonmotorized use, develop mitigation measures or close the area to motorized use.

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* See Appendix A for definitions of the ROS system classifications.

Management Areas 2-2C, 2F

2A, 2B	1. Develop minimum facility campsites (e.g., level and brush-out spots) at heavily used recreation spots, especially those that are water oriented, to protect resources by encouraging camping away from the water.
2B	1. Within this Management Area, develop the Stillwater River Float Trail on the Tally Lake Ranger District. - Maintain a natural appearing shoreline. - Maintain the Upper Stillwater Occupancy Site. - Develop a sign program to designate trail hazards and portages. - Nominate as a National Recreation Float Trail (NRT) by January 1987. 2. While providing motorized access opportunities, some trails will be maintained for nonmotorized use. Permit but do not encourage motorized use of trails. 3. Develop additional trails where feasible to expand recreation opportunities (e.g., loops and tie-in's to campground complexes).
2C	1. Maintain trails for motorized access opportunities.
<u>Wilderness</u>	
2, 2A, 2B	1. No action can occur in recommended wildernesses that will reduce the areas' wilderness attributes until Congress has made a decision on wilderness classification or otherwise specified how these areas will be managed.
<u>Visual Quality</u>	
2 through 2C	1. The VQO (visual quality objective) will be retention. 2. Use of prescribed fire may depart from this VQO.
<u>Wildlife and Fish</u>	
2 through 2C	1. Use prescribed fire to improve habitat for wildlife. 2. Trees and shrubs may be planted or removed to maintain or enhance vegetative diversity. 3. Adhere to the Forest-wide standards for grizzly bear management in occupied grizzly bear habitat.

Management Areas 2-2C, 2F

2B	1. Prohibit overnight camping on Clayton Island (Hungry Horse Ranger District) until August 1 each year to protect wildlife habitat.
<u>Water</u>	
2 through 2C	1. Maintain long-term water quality to meet or exceed State water quality standards. To ensure meeting these standards, surface-disturbing activities will be monitored where this need is identified. 2. Refer to the Forest-wide standards under Water and Soils for Best Management Practices, Landtype Guidelines, and standards applicable to projects or activities within this Management Area. 3. All project proposals will be analyzed and evaluated to determine the potential water quantity and quality impacts. Mitigation measures will be developed to minimize adverse effects.
<u>Timber</u>	
2 through 2C	1. Lands are classified as unsuitable for timber management, and timber harvest will not be scheduled. Allow removal of timber salvage, firewood, and other forest products from existing open roads when recreation values can be protected or enhanced. 2. Cone collection, seed production areas, and tree improvement projects, while not emphasized, are generally compatible.
<u>Minerals</u>	
2 through 2C	1. Exploration and development activities allowed under the mining laws, Mining Act Use Regulations, and the Mineral Leasing Act will be in accordance with approved permits and plans of operation. 2. Oil and Gas lease stipulations will be applied within this Management Area by landtype as stated in the Landtype Guidelines (Appendix Q).
<u>Lands</u>	
2A	1. Place high priority on acquiring lands in the Glacier Slough area.
2B	1. Place high priority on acquiring lands adjacent to the Stillwater Recreation Float Trail.

Management Areas 2-2C, 2F

2 through 2C	1. Land acquisition generally will be considered to protect roadless values or for trail and trailhead easements.
	2. These Management Areas are avoidance areas for utility corridors (see Appendix J).
<u>Facilities</u>	
Roads	
2 through 2C	1. Roads will not be constructed for the management of surface resources. If road construction is required to control insect and disease epidemics, this plan will be amended.
2 through 2C	1. Roads constructed for minerals activities will be closed to the general public and will be obliterated and revegetated when no longer needed.
<u>Prescribed Fire</u>	
2 through 2C	1. Follow Forest-wide standards for fire management and refer to the Fire Management Direction in Appendix G.
	2. Prescribed fire may be used to enhance resource values and reduce hazardous fuel accumulation. Unplanned ignition prescribed fire procedures may be implemented on-site specific plans to enhance designated resource values and to allow fire to assume it's natural ecological role.
<u>Protection</u>	
Fire Suppression	
2 through 2C	1. Follow Forest-wide standards for fire management and refer to the Fire Management Direction in Appendix G.
	2. The appropriate suppression response will be compatible with the goals of this management area.
2A	1. In the Glacier Slough area (Swan Lake Ranger District), aggressive fire control action will be applied due to the small area and the mixed ownership pattern.
<u>Range</u>	
2 through 2C	1. Existing domestic livestock use will be permitted to continue. Adjustments in AUM's may be made to ensure compatibility with Management Area goals.

Schedule of Management Practices (Average Annual Amount)

Management Practice	Units	Proposed Decade 1	Probable Decade 2
Trail Construction/ Reconstruction	Miles	2.0	2.0
Soil & Water Improvement	Acres	8.0	8.0
T&E Habitat Improvement	Acres	50.0	50.0
Wildlife Habitat Improvement	Acres	20.0	20.0
Range Improvement	Acres	5.0	5.0

Monitoring and Evaluation Requirements

The monitoring requirements from Chapter V that are applicable to these Management Areas are: 1, 2, 5, 8, 10, 13, 14, 16-25, 38, 48, 53, 54, and 57-59. The procedure outlined in Chapter V will be followed to evaluate the data gathered during monitoring.

MANAGEMENT AREAS 3, 3A

DESCRIPTION

The following Management Areas consist of nonforested lands and timberlands that are suited for amenity value resources.

Management Area 3 (40,257 acres*) consists of nonforest lands and timberlands where timber management is uneconomical and/or the area is more suited for amenity value resources. Area 3 occurs throughout the Forest.

Management Area 3A includes five Research Natural Areas (RNAs): 682 acres of the Swan River RNA located along the Swan River on the Swan Lake Ranger District; 5,308 acres of the LeBeau RNA located at the north end of the Tally Lake Ranger District; 2,062 acres of the Tuchuck RNA located at the northern end of the Glacier View Ranger District; 646 acres of the East Shore RNA located above Wood's Bay on the Swan Lake Ranger District; and 200 acres of the Little Bitterroot RNA, located on an isolated parcel west of the Island Unit of the Swan Lake Ranger District. All RNAs are to be managed to perpetuate natural ecosystems and encourage scientific research. Once developed, RNA management plans will specify long term management direction.

Management Area 3A also includes 229 acres in the Condon Creek Botanical Special Interest Area (SIA), located along Condon Creek on the Swan Lake Ranger District.

GOALS

3

Manage to maintain or enhance amenity values that include nongame wildlife species, visual quality, old growth, and water quality. Generally, the area will provide wildlife and fish habitat, including security from human disturbance. Recreation opportunities will be provided where they won't interfere with wildlife and fish values.

In areas recommended for wilderness, maintain all wilderness values until Congress reaches a decision on wilderness additions. Total proposed wilderness within this Management Area is 395 acres.

* Includes proposed wilderness acres.

Management Areas 3, 3A

3A

The East Shore RNA will be managed to allow natural vegetative changes to occur with minimum human interference. Water howellia habitat in the Condon Creek Botanical SIA will be managed in accordance with direction set in the Conservation Strategy for Howellia aquatilis (unbound Appendix VV). The remainder of the SIA will be managed to allow natural vegetative changes to occur with minimum human interference.

Vegetation manipulation in upland areas may occur in the SIA to restore a more natural ecological system, for example where fire suppression has allowed unnatural accumulation of fuels and an unnatural shift in species composition. However, this vegetation management may only occur through activities that emulate natural ecological processes.

STANDARDS

In addition to the Forest-wide Management Direction included in Chapter II of this Plan, the following standards will apply to this Management Area:

The specific management direction for research natural areas, including research activities planned for the area, will be incorporated as Forest Plan amendments upon establishment of the RNA.

Recreation

3

1. Manage to meet the appropriate ROS (recreation opportunity spectrum) guidelines (see Appendix A).

2. Existing facilities such as trails, trailheads, toilets, hitch racks, stock ramps, registration boxes and information signs, will be maintained if consistent with the management goals. Trail construction is allowed to access and meet adjacent Management Area objectives if consistent with the management goal of this area. Trail closures will be implemented where necessary to meet Management Area objectives and/or to protect the facility.

3A

1. Recreational use will not be promoted nor developed within the Research Natural Areas or Special Interest Area.

Wilderness

3

1. No action can occur in recommended wildernesses that will reduce the areas' wilderness attributes until Congress has made a decision on wilderness classification or otherwise specified how these areas will be managed.

Management Areas 3, 3A

Visual Quality	
3	1. The VQO (visual quality objective) is retention.
Wildlife and Fish	
3	1. Adhere to the Forest-wide standards for grizzly bear management in occupied grizzly bear habitat
Wildlife and Fish (continued)	
3	2. Use of prescribed fire for wildlife habitat improvement is compatible.
Timber	
3	1. Lands are classified as unsuitable for timber management, and timber harvest will not be scheduled.
	2. Allow removal of timber salvage, firewood, and other forest products from existing open roads when amenity resource values can be protected or enhanced.
	3. Cone collection, seed production areas, and tree improvement projects, while not emphasized, are generally compatible.
	4. No investments will be made in cultural treatments.
3A	1. Lands within the RNAs and SIA are classified as unsuitable for timber management and timber harvest will not be scheduled. However, timber harvest may occur within the SIA if consistent with the goal of restoring a more natural ecological system.
Water	
3	1. Maintain long-term water quality to meet or exceed State water quality standards. To ensure meeting these standards, surface-disturbing activities will be monitored where this need is identified.
	2. Refer to the Forest-wide standards under Water and Soils for Best Management Practices, Landtype Guidelines, and standards applicable to projects or activities within this Management Area.
	3. All project proposals will be analyzed and evaluated to determine the potential water quantity and quality impacts. Mitigation measures will be developed to minimize adverse effects.

Management Areas 3, 3A

Minerals

3, 3A	1. Exploration and development activities allowed under the mining laws, Mining Act Use Regulations, and the Mineral Leasing Act will be in accordance with approved permits and plans of operation. 2. Oil and Gas lease stipulations will be applied within this Management Area by landtype as stated in the Landtype Guidelines (Appendix Q).
3A	1. Plans or permits related to minerals activities will be approved only if such activities would not jeopardize the resource values of the RNA and SIA. Surface occupancy of the RNA and SIA will not be permitted.

Lands

3, 3A	1. These Management Areas are avoidance areas for utility corridors (see Appendix J).

Facilities

Roads

3, 3A	1. Roads will not be constructed for the management of surface resources. If road construction is required to control of insect and disease epidemics, this plan will be amended.
3	1. Roads constructed for mineral activities will be closed to the general public, and will be obliterated and revegetated when no longer needed.
3A	1. No roads will be constructed.

Prescribed Fire

3, 3A	1. Prescribed fire may be used to enhance resource values and reduce hazardous fuel accumulation. Unplanned ignition prescribed fire procedures may be implemented on-site specific plans to enhance designated resource values and to allow fire to assume it's natural ecological role. 2. Follow Forest-wide standards for fire management and refer to Fire Management Direction in Appendix G.

Protection

Fire Suppression

3, 3A	1. Follow Forest-wide standards for fire management and refer to Fire Management Direction in Appendix G.

Management Areas 3, 3A

	2. The appropriate suppression response will be compatible with the goals of this management area.
3A	1. Control is usually the only appropriate suppression response until replaced by RNA management direction.

Schedule of Management Practices (Average Annual Amount)

T&E Habitat Improvement	Acres	15.0	15.0

Monitoring and Evaluation Requirements

The monitoring requirements from Chapter V that are applicable to these Management Areas are: 1, 2, 5, 8, 10, 13, 14, 16-25, 38, 48, 53, 54, and 57-59. The procedure outlined in Chapter V will be followed to evaluate the data gathered during monitoring.

MANAGEMENT AREA 4

DESCRIPTION	Management Area 4 (314 acres) consists of all campgrounds, picnic areas, boat launches, and other developed recreation sites excluding Big Mountain Winter Sports Area.*
GOALS	Provide for developed recreation opportunities with management to the full-service level of existing developed facilities.**
	Full service implies that, in addition to protecting public safety and health, the Forest visitor is to be provided a pleasant experience.
STANDARDS	In addition to the Forest-wide Management Direction included in Chapter II of this Plan, the following standards will apply to this Management Area:
Recreation	1. All facilities will be clean and well-kept, potential hazards eliminated, garbage bins emptied frequently, and resource or facility damage prevented.
Visual Quality	1. The visual quality of the developed sites will be maintained to the extent possible.
Cultural Resources	1. Emphasize interpretation where compatible with protection of the cultural resources.
Wildlife and Fish	1. Implement habitat improvement projects for small mammals, birds and other species adapted to developed sites, if cost-effective and compatible with developed site management.
	2. Adhere to the Forest-wide standards for grizzly bear management in occupied grizzly bear habitat.
Range	1. Grazing of domestic livestock is not permitted.
Timber	1. Developed sites are classified as unsuitable for timber management, and timber harvest will not be scheduled.
	2. Hazard trees will be removed.
	3. TSI (timber stand improvement) and reforestation will be done only to improve recreational or visual opportunities.

Management Areas 4

4. Noncommercial and commercial cutting and removal of firewood is not permitted.

Water

1. Maintain long-term water quality to meet or exceed State water quality standards. To ensure meeting these standards, surface-disturbing activities will be monitored where this need is identified.

2. Refer to the Forest-wide standards under Water and Soils for Best Management Practices, Landtype Guidelines, and standards applicable to projects or activities within this Management Area.

3. All project proposals will be analyzed and evaluated to determine the potential water quantity and quality impacts. Mitigation measures will be developed to minimize adverse effects.

Minerals

1. Exploration and development activities allowed under the mining laws, Mining Act Use Regulations, and the Mineral Leasing Act will be in accordance with approved permits and plans of operation. Withdrawal will be made only if a potential mineral related activity threatens to impact the intended or actual surface use of the area(s).

2. Oil and Gas lease stipulations will be applied within this Management Area by landtype as stated in the Landtype Guidelines (Appendix Q).

Facilities

1. Maintain roads and trails to the standards necessary for the protection of other resources. Recognize the ROS (recreation opportunity spectrum) classification of the surrounding area.

2. Maintain, alter, or replace developed facilities to meet recreation management objectives, laws, and regulations. Assure user safety, protection of investments, and accessibility to special populations (handicapped, elderly).

Lands

1. This Management Area is an avoidance area for utility corridors (see Appendix J).

Prescribed Fire

1. Follow Forest-wide standards for fire management and refer to Fire Management Direction in Appendix G.

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* Big Mountain Winter Sports Area is designated Management Area 20.

** See the Forest Service standards and guidelines on Cleaning Recreation Sites, July 1980, USDA Forest Service #80231801, page 6-7.

Management Area 4

	2. The use of prescribed fire must be compatible with the character of the developed site.
Protection	
Fire Suppression	1. Follow Forest-wide standards for fire management and refer to Fire Management Direction in Appendix G.
	2. The objective of fire suppression will be prompt control at all intensity levels. Suppression tactics that least alter the landscape or damage other resources will be utilized.
Insect and Disease	1. Insect and disease infested trees may be removed or treated.

Schedule of Management Practices (Average Annual Amount)

No management practices are scheduled.

Monitoring and Evaluation Requirements

The monitoring requirements from Chapter V that are applicable to this Management Area are: 1, 2, 3, 48, 58, 59. The procedure outlined in Chapter V will be followed to evaluate the data gathered during monitoring.

MANAGEMENT AREA 5

DESCRIPTION

Management Area 5 (3,753 acres) consists of roaded timberlands in areas of high scenic value. Much of this Management Area lies along the Swan Valley Highway (State Highway #83).

GOALS

One of the primary management objectives consists of maintaining a pleasing, natural-appearing landscape in which management activities are not evident. Management activities may only repeat form, line, color, and texture that are frequently found in the characteristic landscape. Changes in their qualities of size, amount, intensity, direction, pattern, etc., should not be evident.

The Forest Service will manage the timber resource with roads in a manner which compliments and protects high scenic values, and, where applicable, complies with the Swan Valley Highway Landscape Management Plan.* Where possible, minimize insect, disease, and fuel buildups that reduce other resource values.

All resources will be managed consistent with the Retention VQO (Visual Quality Objective). Dispersed recreation activities in a roaded natural-appearing environment will be permitted.

STANDARDS

In addition to the Forest-wide Management Direction included in Chapter II of this Plan, the following standards will apply to this Management Area:

Visual Quality

1. The VQO is Retention.

2. Prior to implementing any of landscape altering activities, complete a visual analysis that encompasses that portion of this Management Area affected by the project.

3. The visual analysis process will occur during development of, and be coordinated with, all project planning for proposed resource activities.

* Implemented in 1979 by a Memorandum of Understanding aimed at maintaining the scenic qualities adjacent to the Swan Valley Highway.

Management Area 5

4. Use appropriate mitigation measures to achieve and/or maintain the Retention VQO as defined by the following criteria:

Low Visual Absorption Capability*

- Regeneration harvest will utilize individual tree or group selection, seed tree, shelterwood, or clearcut silvicultural systems.
- The most sensitive layout areas are primary ridges and focal points.
- Even-aged units shall generally not exceed 5 acres in size.

Medium Visual Absorption Capability*

- Regeneration harvest will utilize individual tree or group selection, seed tree, shelterwood, or clearcut silvicultural systems. Even-aged units shall generally not exceed 10 acres in size.

High Visual Absorption Capability*

- Regeneration harvest will utilize individual tree or group selection, seed tree, shelterwood, or clearcut silvicultural systems. Even-aged units shall generally not exceed 15 acres in size.

The following criterion applies to all the Visual Absorption Capability classifications:

- Road cuts and fills should not be evident to the casual Forest visitor.

5. Areas that do not currently meet the Retention Visual Quality Objective will be rehabilitated where feasible.

Recreation

1. Trail maintenance and construction are compatible so long as the retention VQO and timber management objectives are met.

Timber

1. Lands are classified as suitable for timber management, and timber harvest will be scheduled.

2. The size of units and types of harvest are discussed under Visual Quality.

* Refer to Chapter VII GLOSSARY, under Visual Absorption Capability.

Management Area 5

3. Project design will determine the most cost effective logging and transportation system that meets the Management Area's visual objectives. Decisions on logging and transportation systems should consider all treatments needed over a timber rotation.

Wildlife and Fish

1. Adhere to the Forest-wide standards for grizzly bear management in occupied grizzly bear habitat.

Water

1. Maintain long-term water quality to meet or exceed State water quality standards. To ensure meeting these standards, surface-disturbing activities will be monitored where this need is identified.

2. Refer to the Forest-wide standards under Water and Soils for Best Management Practices, Landtype Guidelines, and standards applicable to projects or activities within this Management Area.

3. All project proposals will be analyzed and evaluated to determine the potential water quantity and quality impacts. Mitigation measures will be developed to minimize adverse effects.

Minerals

1. Exploration and development activities allowed under the mining laws, Mining Act Use Regulations, and the Mineral Leasing Act will be in accordance with approved permits and plans of operation.

2. Oil and Gas lease stipulations will be applied within this Management Area by landtype as stated in the Landtype Guidelines (Appendix Q). Special stipulations may be necessary for certain activities because of the management goals for this area (refer to AFFECTED ENVIRONMENT, EVALUATION CRITERIA in Appendix O).

Facilities

Roads

1. Design and construct roads that are in harmony with the Retention VQO. Road location and design consider the benefits to future recreation uses. The transportation system must be kept in the condition necessary to meet management direction and to protect the investment. Roads must be maintained to the appropriate level for protection of the basic resources and for safety.

2. Road management activities must be responsive to Forest resource needs as identified in site-specific analysis. Road operations such as level of use and maintenance will be

Management Area 5

determined on a case-by-case basis during project level planning to meet objectives for adjacent management areas and/or to prevent resource or facility damage.

3. Road closures considered necessary to ensure wildlife security, meet recreation use objectives, and provide resource protection will be implemented.

Prescribed Fire

1. Follow Forest-wide standards for fire management and refer to Fire Management Direction in Appendix G.

2. Fire may be prescribed to reduce activity fuel accumulations to retention VQO levels or maintain the retention VQO.

Protection

Fire Suppression

1. Follow Forest-wide standards for fire management and refer to Fire Management Direction in Appendix G.

2. Control is usually the only appropriate suppression response. Line officer approval is required to implement suppression tactics that involve soil displacement by mechanical means.

Lands

1. These lands are not excluded from or need not be avoided by utility corridors (see Appendix J).

Schedule of Management Practices (Average Annual Amount)

Management Practice	Units	Proposed Decade 1	Probable Decade 2
Clear Cut-Seed Cut	MMBF Acres	0.2 11.0	0.2 10.0
Total Timber Harvest*	MMBF	0.2	0.2
Fuels Management	Acres	11.0	10.0
Silviculture/Stand Exams	Acres	950.0	950.0
Reforestation	Acres	11.0	10.0
Timber Stand Improvement	Acres	10.0	10.0

* The proposed 10-year timber sale offerings schedule is presented in Appendix M

Monitoring and Evaluation Requirements

The monitoring requirements from Chapter V that are applicable to this Management Area are: 1, 2, 4, 5, 8, 10, 13, 14, 16-25, 31-41, 48-54, and 57-59. The procedure outlined in Chapter V will be followed to evaluate the data gathered during monitoring.

MANAGEMENT AREAS 7, 7A

DESCRIPTION

The following Management Areas consist of roaded timberlands in visually sensitive areas.

Management Area 7 (42,861 acres) consists of timberlands in areas of high scenic value.

Management Area 7A (5,934 acres) consists of very productive timberlands located in the Noisy Face Geographic Unit. These areas have high scenic value due to the visual importance of this area to communities in the Flathead Valley.

GOALS

7, 7A

One of the primary management goals consists of maintaining a pleasing, natural-appearing landscape in which management activities are not dominant. The Forest Service will manage the timber resource with roads in a manner that compliments and protects high scenic values. Where possible, minimize insect, disease, and fuel buildups that reduce resource values.

Maintain or create natural-appearing, diverse patterns of vegetation, using various silvicultural systems. These goals will be accomplished by limiting application of even-aged timber management practices. Treatment areas will be designed to reflect the form, line, color or texture common to the characteristic landscape in a particular viewing area.

All resources will be managed consistent with the Partial Retention VQO (Visual Quality Objective). Dispersed recreation activities in a roaded natural-appearing environment will be permitted.

7A

The Noisy Face Geographic Area contains special visual and recreational qualities due to its proximity to the Flathead Valley. The management objective is to maintain or enhance the quality of these resources while utilizing a portion of the timber production capabilities of the area.

In consideration of the importance placed on the landscape quality of this area, man-induced change is intended to take place slowly and on an appropriate scale.

Management Areas 7, 7A

STANDARDS

In addition to the Forest-wide Management Direction included in Chapter II of this Plan, the following Standards will apply to this Management Area.

Visual Quality

7, 7A

1. The VQO is Partial Retention.

2. Prior to implementing any landscape altering activities, complete a visual analysis that encompasses that portion of this Management Area affected by the project

3. The visual analysis process will occur during development of, and be coordinated with all project planning for proposed resource activities.

4. Use appropriate mitigation measures to achieve and/or maintain the Partial Retention VQO as defined by the following criteria:

Low Visual Absorption Capability *

- Regeneration harvest will utilize individual tree or group selection, seed tree, shelterwood, or clearcut silvicultural systems.
- The most sensitive layout areas are primary ridges and focal points.

7 ONLY

- Even-aged units shall generally not exceed 10 acres in size.

7A ONLY

- Even-aged management units will generally not exceed 2 acres.

7, 7A

Medium Visual Absorption Capability *

- Regeneration harvest will utilize individual tree or group selection, seed tree, shelterwood, or clearcut silvicultural systems. Even-aged units shall generally not exceed 15 acres in size.

High Visual Absorption Capability *

- Regeneration harvest will utilize individual tree or group selection, seed tree, shelterwood, or clearcut silvicultural systems. Even-aged units shall generally not exceed 25 acres in size.

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* Refer to Chapter VII GLOSSARY, under Visual Absorption Capability.

Management Areas 7, 7A

The following criteria apply to all the Visual Absorption Capability classifications:

- Road cuts and fills should be subordinate to the characteristic landscape when viewed from primary viewpoints as determined by the Viewshed Analysis.

5. Areas that do not currently meet the Partial Retention Visual Quality Objective will be rehabilitated where feasible.

Timber

7, 7A

1. Lands are classified as suitable for timber management, and timber harvest will be scheduled. The size of units and types of harvest are discussed under Visual Quality.

2. Project design will determine the most cost effective logging and transportation system that meets the management area's visual objectives. Decisions on logging and transportation systems should consider all treatments needed over a timber rotation.

7A

1. Timber will be managed and scheduled for harvest complementary to landscape management considerations. As a result, the rate of implementation will be slow, and only 3 MMBF will be scheduled for harvest in decade one (refer to Appendix M for timber sale specifics).

2. Retain the old growth hemlock stand adjacent to the Strawberry Lake Road and trail head.

Recreation

7A

1. Develop and implement ORV (Off Road Vehicle) and road management direction that provides security for wildlife but continues to provide reasonable access. Provide for current recreation uses such as motorized recreation, berry picking, hunting, hiking, and firewood gathering. Enhance cross country-skiing and snowmobiling opportunities. Manage motorized use to reduce adverse effects by obtaining support of clubs and other users.

Wildlife and Fish

7, 7A

1. Adhere to the Forest-wide standards for grizzly bear management in occupied grizzly bear habitat.

Management Areas 7, 7A

Water
7, 7A

1. Maintain long-term water quality to meet or exceed State water quality standards. To ensure meeting these standards, surface-disturbing activities will be monitored where this need is identified.

2. Refer to the Forest-wide standards under Water and Soils for Best Management Practices, Landtype Guidelines, and standards applicable to projects or activities within this Management Area.

3. All project proposals will be analyzed and evaluated to determine the potential water quantity and quality impacts. Mitigation measures will be developed to minimize adverse effects.

Minerals

1. Exploration and development activities allowed under the mining laws, Mining Act Use Regulations, and the Mineral Leasing Act will be in accordance with approved permits and plans of operation.

2. Oil and Gas lease stipulations will be applied within this Management Area by landtype as stated in the Landtype Guidelines (Appendix Q). Special stipulations may be necessary for certain activities because of the management goals for this area (refer to AFFECTED ENVIRONMENT, EVALUATION CRITERIA in Appendix O).

Facilities
Roads
7, 7A

1. Design and construct roads that are in harmony with the Partial Retention VQO. Road location and design consider the benefits to future recreation uses. The transportation system must be kept in the condition necessary to meet management direction and to protect the investment. Roads must be maintained to the appropriate level for protection of the basic resources and for safety.

2. Road management activities must be responsive to Forest resource needs as identified in site-specific planning. Road operations such as level of use and maintenance will be determined on a case-by-case basis during project level planning to meet objectives for adjacent management areas and/or to prevent resource or facility damage.

Management Areas 7, 7A

3. Road closures considered necessary to ensure wildlife security, meet recreation use objectives, and provide resource protection will be implemented.

7

1. Within the East Shore Geographic Unit (see Chapter IV) it may be necessary to restrict motorized access during road construction and logging to help prevent degradation of public water supplies in the area.

7A

1. Utilize the existing road system to the extent possible. During the first decade, no more than three miles of new road will be constructed along with one mile of major reconstruction.

Lands

7, 7A

1. Special use proposals must meet the goals of this Management Area.

2. These lands are not excluded from or need not be avoided by utility corridors (See Appendix J).

Prescribed Fire

7, 7A

1. Follow Forest-wide standards for fire management and refer to the Fire Management Direction in Appendix G.

2. Hazard reduction will utilize tactics that will least alter the landscape.

3. When planning on treating activity fuel with prescribed fire, the District Ranger should have a cost comparison of alternative fuel treatment options and risk analysis.

Protection

Fire Suppression

7, 7A

1. Follow Forest-wide standards for fire management and refer to Fire Management Direction in Appendix G.

2. Control of wildfire will be the dominant suppression response. Confine and contain options may be used.

Insect & Disease

7, 7A

1. The timber resource should be managed in such a manner as to prevent insect and disease buildups that reduce resource values. This will support the primary management emphasis of maintaining a pleasing, natural-appearing landscape in which management activities are not dominant.

Management Areas 7, 7A

Range
7, 7A

1. Existing domestic livestock use will be permitted to continue. Adjustments in AUM's may be made to ensure compatibility with Management Area goals.

Schedule of Management Practices (Average Annual Amount)

Management Practice	Units	Proposed Decade 1	Probable Decade 2
Soil & Water Improvement	Acres	8.0	8.0
Wildlife Habitat Improvement	Acres	15.0	15.0
Clear Cut-Seed Cut	MMBF Acres	2.2 149.0	3.3 218.0
Shelterwood-Removal Cut	MMBF Acres	0.1 12.0	0.2 30.0
Salvage/Sanitation	MMBF Acres	0.2 160.0	0.2 150.0
Total Timber Harvest*	MMBF	2.5	3.7
Fuels Management	Acres	321.0	398.0
Silviculture/Stand Exams	Acres	5,000.0	5,000.0
Reforestation	Acres	161.0	248.0
Timber Stand Improvement	Acres	400.0	400.0
Road Construction	Miles	4.0	3.0
Road Reconstruction	Miles	1.0	1.0
Range Improvement	Acres	5.0	5.0

* The proposed 10-year timber sale offerings schedule is presented in Appendix M

Monitoring and Evaluation Requirements

The monitoring requirements from Chapter V that are applicable to these Management Areas are: 1, 2, 4, 5, 8, 10, 13, 14, 16-25, 30, 31, 41, and 48-59. The procedure outlined in Chapter V will be followed to evaluate the data gathered during monitoring.

MANAGEMENT AREA 8

DESCRIPTION	Management Area 8 (7,551 acres) consists of unroaded timberlands in areas of high scenic value.
GOALS	One of the primary management objectives consists of maintaining a pleasing, natural-appearing landscape in which management activities are not dominant. The Forest Service will manage the timber resource without roads in this Management Area. Where possible, minimize insect, disease, and fuel buildups that reduce other resource values. Maintain or create natural-appearing, diverse patterns of vegetation, using various silvicultural systems. These goals will be accomplished by limiting application of even-age timber management practices. Treatment areas will be designed to reflect the form, line, color, or texture common to the characteristic landscape in a particular viewing area. All resources will be managed consistent with the Partial Retention VQO (Visual Quality Objective). Dispersed recreation activities in an unroaded environment will be permitted.
STANDARDS	In addition to the Forest-wide Management Direction included in Chapter II of this Plan, the following Standards will apply to this Management Area.
<u>Visual Quality</u>	1. The VQO is Partial Retention. 2. Prior to implementing any landscape altering activities, complete a visual analysis that encompasses that portion of this Management Area affected by the project. 3. The visual analysis process will occur during development of, and be coordinated with all project planning for proposed resource activities. 4. Use appropriate mitigation measures to achieve and/or maintain the Partial Retention VQO as defined by the following criteria:

Management Area 8

Low Visual Absorption Capability *

- Regeneration harvest will utilize individual tree or group selection, seed tree, shelterwood, or clearcut silvicultural systems.
- The most sensitive layout areas are primary ridges and focal points.
- Even-aged units shall generally not exceed 10 acres in size.

Medium Visual Absorption Capability *

- Regeneration harvest will utilize individual tree or group selection, seed tree, shelterwood, or clearcut silvicultural systems. Even-aged units shall generally not exceed 15 acres in size.

High Visual Absorption Capability *

- Regeneration harvest will utilize individual tree or group selection, seed tree, shelterwood, or clearcut silvicultural systems. Even-aged units shall generally not exceed 25 acres in size.

5. Areas that do not currently meet the Partial Retention Visual Quality Objective will be rehabilitated where feasible.

Timber

1. Lands are classified as suitable for timber management, and timber harvest will be scheduled. The size of units and types of harvest are discussed under Visual Quality.

2. Project design will determine the most cost effective logging system that meets the Management Area's visual objectives. Decisions on logging systems should consider all treatments needed over a timber rotation.

Recreation

1. Trail maintenance and construction are compatible so long as the partial retention VQO and timber management objectives are met.

Wildlife and Fish

1. Adhere to the Forest-wide standards for grizzly bear management in occupied grizzly bear habitat.

* Refer to Chapter VII GLOSSARY, under Visual Absorption Capability.

Management Area 8

Water	1. Maintain long-term water quality to meet or exceed State water quality standards. To ensure meeting these standards, surface-disturbing activities will be monitored where this need is identified. 2. Refer to the Forest-wide standards under Water and Soils for Best Management Practices, Landtype Guidelines, and standards applicable to projects or activities within this Management Area. 3. All project proposals will be analyzed and evaluated to determine the potential water quantity and quality impacts. Mitigation measures will be developed to minimize adverse effects.
Minerals	1. Exploration and development activities allowed under the mining laws, Mining Act Use Regulations, and the Mineral Leasing Act will be in accordance with approved permits and plans of operation. 2. Oil and Gas lease stipulations will be applied within this Management Area by landtype as stated in the Landtype Guidelines (Appendix Q). Special stipulations may be necessary for certain activities because of the management goals for this area (refer to AFFECTED ENVIRONMENT, EVALUATION CRITERIA in Appendix O).
Facilities Roads	1.Roads will not be constructed except for temporary minimum support facilities for aerial harvest systems or as needed to recognize mineral access rights. Any road construction will be guided by the visual analysis.
Prescribed Fire	1.Follow Forest-wide standards for fire management and refer to Fire Management Direction in Appendix G. 2.Hazard reduction will utilize tactics that will least alter the landscape.
Protection Fire Suppression	1.Follow Forest-wide standards for fire management and refer to Fire Management Direction in Appendix G.

Management Area 8

2.Control of wildfire will be the dominant suppression response. Confine and contain options may be appropriate when conditions warrant.

Lands

1.These lands are not excluded from or need not be avoided by utility corridors (see Appendix J).

Schedule of Management Practices (Average Annual Amount)

No management activities are scheduled for this decade.

Monitoring and Evaluation Requirements

The monitoring requirements from Chapter V that are applicable to this Management Area are: 1, 2, 4, 5,8, 10, 13, 14, 16-25, 30, 31, 41, and 48-59. The procedure outlined in Chapter V will be followed to evaluate the data gathered during monitoring.

MANAGEMENT AREAS 9, 9A *[9B changed to 3A per Amendment 22]*

DESCRIPTION

Management Area 9 (18,812 acres) consists of timberlands capable of providing white-tailed deer winter habitat. The majority of these lands lie in the Swan River Valley on the Swan Lake Ranger District.

Management Area 9A was deleted between proposed and final Plan.

GOALS

Provide the size, age, diversity, and distribution of habitat units (both cover and forage areas) suitable for white-tailed deer winter habitat.

Management of other resources must be compatible with the white-tailed deer winter range management goals. All summer recreation activities in a roaded natural-appearing environment are compatible. Winter recreation activities will not be encouraged and may be restricted if conflicts between recreationists and white-tailed deer management occur.

Timber harvest can be used to improve or maintain the optimum relationships of cover to forage. Prescribed burning is also a habitat improvement method.

STANDARDS

In addition to the Forest-wide Management Direction included in Chapter II of this Plan, the following Standards will apply to this Management Area:

The specific management direction for Research Natural Areas, including research activities will be incorporated as Forest Plan amendments upon establishment of the RNA.

<u>Wildlife and Fish</u>

1. Complete a Long-Range White-Tailed Deer Winter Range Activity Schedule for each winter range unit. Utilize this schedule to guide project planning.

2. Implement the full range of wildlife habitat improvements.

3. Consider those portions of this Management Area separated by one-half mile or more as separate winter ranges.

Management Areas 9, 9B

4. Manage to achieve at least 50 percent of the area in winter thermal cover.

5. Each managed habitat unit (cover or forage area) will generally be less than 10 acres and shaped to ensure optimum use of the forage produced. Regeneration of each managed habitat unit will include diverse tree species but will feature Douglas-fir (40 percent of the trees, by number) if the site is capable of growing Douglas-fir.

6. Encourage winter logging to better assure a continuous supply of winter food.

7. Adhere to the Forest-wide Standards for grizzly bear management in occupied grizzly bear habitat.

Recreation

Trails

1. Maintenance or construction of hiking trails is compatible, but ski trails will be evaluated on a case-by-case basis. Trail closures may be implemented to meet Management Area objectives or protect the facility and other resources.

Visual Quality

1. The visual quality of these Management Areas generally will meet a partial retention visual quality objective.

Water

1. Maintain long-term water quality to meet or exceed State water quality standards. To ensure meeting these standards, surface-disturbing activities will be monitored where this need is identified.

2. Refer to the Forest-wide standards under Water and Soils for Best Management Practices, Landtype Guidelines, and standards applicable to projects or activities within this Management Area.

3. All project proposals will be analyzed and evaluated to determine the potential water quantity and quality impacts. Mitigation measures will be developed to minimize adverse effects.

Range

1. Existing domestic livestock use will be permitted to continue; however, adjustments in AUM's may be made to ensure compatibility with white-tailed deer winter range management goals.

Management Areas 9, 9B

Timber	1. Lands are classified as suitable for timber management, and timber harvest will be scheduled. 2. Timber stand improvement will be applied only when adequate winter thermal cover and wildlife movement is assured. 3. The scheduling of timber harvests designed to provide optimum white-tailed deer winter habitat will be specified by the Long-Range White-Tailed Deer Winter Range Activity Schedule.
Minerals	1. Exploration and development activities allowed under the mining laws, Mining Act Use Regulations, and the Mineral Leasing Act will be in accordance with approved permits and plans of operation. 2. Oil and Gas lease stipulations will be applied within this Management Area by landtype as stated in the Landtype Guidelines (Appendix Q). Special stipulations may be necessary for certain activities because of the management goals for this area (refer to AFFECTED ENVIRONMENT, EVALUATION CRITERIA in Appendix O).
Lands	1. Special uses, land exchanges and rights-of-way proposals will be carefully reviewed to ensure maintenance and enhancement of white-tailed deer winter habitat. 2. These lands are not excluded from or need not be avoided by utility corridors (see Appendix J).
Facilities Roads	1. Roads will be closed to motorized vehicles December 1 to May 15 if motorized use has the potential of adversely affecting wintering white-tailed deer populations unless open roads are needed to provide access to other public or private lands or to accomplish habitat improvement projects. 2. Additional road closures may be implemented to meet adjacent Management Area objectives and/or to protect resources or the facility.

Management Areas 9, 9B

3. Road construction and reconstruction activities will be restricted if adverse impacts could occur to white-tailed deer populations.

Prescribed Fire

1. Follow Forest-wide standards for fire management and refer to the Fire Management Direction in Appendix G.

Protection

Fire Suppression

1. Follow Forest-wide standards for fire management and refer to the Fire Management Direction in Appendix G.

2. The appropriate suppression response will be compatible with the goals of white-tailed deer winter habitat management.

Schedule of Management Practices (Average Annual Amount)

Management Practices	Units	Proposed Decade 1	Probable Decade 2
Soil & Water Improvement	Acres	8.0	8.0
Wildlife Habitat Improvement	Acres	10.0	10.0
T & E Habitat Improvement	Acres	7.0	7.0
Clear Cut-Seed Cut	MMBF Acres	2.5 150.0	1.8 120.0
Salvage/Sanitation	MMBF Acres	0.3 166.0	0.3 150.0
Total Timber Harvest*	MMBF	2.8	2.1
Fuels Management	Acres	316.0	270.0
Silviculture/Stand Exams	Acres	2,800.0	2,800.0
Reforestation	Acres	150.0	120.0
Timber Stand Improvement	Acres	400.0	400.0
Road Construction	Miles	1.5	1.1
Road Reconstruction	Miles	0.5	0.5
Range Improvement	Acres	10.0	10.0

* The proposed 10-year timber sale offerings schedule is presented in Appendix M.

Monitoring and Evaluation Requirements

The monitoring requirements from Chapter V that are applicable to these Management Areas are: 1, 2, 4, 5, 8, 9, 10, 13, 14, 16-25, 30, 31, 41, and 48-59. The procedure outlined in Chapter V will be followed to evaluate the data gathered during monitoring.

MANAGEMENT AREAS 10, 10A, 10B *[10B added per Amendment 23]*

DESCRIPTION

The following Management Areas include the Administrative Sites on the Flathead National Forest.

Management Area 10 (1,258 acres) consists of lands designated as Administrative Sites.

Management Area 10A (193 acres), which includes the Condon Tree Improvement Area, consists of timberlands adjacent to the Condon Work Center in the Swan Valley. Capital investments have been made in this area to provide sites for genetic testing of trees and future seed production.

Management Area 10B (10 acres) includes a portion of the Coram Pasture Administrative Site adjacent to U.S. Highway 2 near Coram. This area is an existing utility corridor.

GOALS

10, 10B

Provide for the continued use of existing facilities at Administrative Sites through a periodic planned preventative maintenance program of sanitary, water, and solid waste systems, buildings and other structures.

10A

Establish, protect, and manage outplanting for genetic testing and to provide an economic, accessible, and reliable source of improved seed for reforestation purposes. The visual quality of the landscape will be retained. Recreation use will not be encouraged except for VIS or public information purposes. This Management Area will provide nongame wildlife habitat.

STANDARDS

In addition to the Forest-wide Management Direction included in Chapter II of this Plan, the following Standards will apply to this Management Area:

<u>Timber</u>

10A

1. Lands are classified as unsuitable for timber management, and timber harvest will not be scheduled.

2. Conduct evaluations and maintenance operations in accordance with the Flathead 10-year Tree Improvement Program.

Management Areas 10, 10A, 10B

Wildlife and Fish	
10, 10A	1. Adhere to the Forest-wide standards for grizzly bear management in occupied grizzly bear habitat.
10A	1. Protect plantations from excessive wildlife (game and nongame) damage.
Range	
10A	1. Livestock grazing will not be permitted.
Water	
10, 10A, 10B	1. Maintain long-term water quality to meet or exceed State water quality standards. To ensure meeting these standards, surface-disturbing activities will be monitored where this need is identified. 2. Refer to the Forest-wide standards under Water and Soils for Best Management Practices, Landtype Guidelines, and standards applicable to projects or activities within this Management Area. 3. All project proposals will be analyzed and evaluated to determine the potential water quantity and quality impacts. Mitigation measures will be developed to minimize adverse effects. 4. Surface and ground water will be protected during any pesticide or herbicide treatments.
Minerals	
10, 10A, 10B	1. Exploration and development activities allowed under the mining laws, Mining Act Use Regulations, and the Mineral Leasing Act will be in accordance with approved permits and plans of operation. 2. Oil and Gas lease stipulations will be applied within this Management Area by landtype as stated in the Landtype Guidelines (Appendix Q). Special stipulations may be necessary for certain activities because of the management goals for this area (refer to AFFECTED ENVIRONMENT, EVALUATION CRITERIA in Appendix O).
Lands	
10, 10A	1. These lands will not be considered for disposal.

Management Areas 10, 10A, 10B

	2. These Management Areas are avoidance areas for utility corridors (see Appendix J).
10B	1. These lands are not excluded from and need not be avoided by utility corridors.
<u>Recreation</u>	
10	1. Administrative Sites within the boundary of the Wild and Scenic corridor will also follow the direction in MA 18.
<u>Facilities</u>	
10, 10A, 10B	1. Maintain all buildings, potable water, sanitation and solid waste systems to be functionally acceptable under current laws and regulations.
	2. Identify systems requiring major repair, modification, or replacement prior to emergency failure.
10A	1. Transportation and other support facilities may be planned and constructed in support of genetic testing and seed production objectives.
<u>Protection</u>	
Fire Suppression	
10, 10A, 10B	1. Regular periodic inspections will be conducted and aggressive action will be taken to suppress fire, insect, disease, or animal damage to the plantations.

Schedule of Management Practices (Average Annual Amount)

Activities will be as scheduled in the Flathead National Forest 10-year Tree Improvement Program (Appendix MM).

Monitoring and Evaluation Requirements

The monitoring requirements from Chapter V that are applicable to these Management Areas are: 2, 4, 5, 48, 51, 52, 58, 59. The procedure outlined in Chapter V will be followed to evaluate the data gathered during monitoring.

MANAGEMENT AREAS 11, 11A, 11B, 11C *[11B changed to 3A per Amendment 22]*

DESCRIPTION

The following Management Areas include lands providing good grizzly bear habitat which consists of natural, relatively open, undisturbed (by humans) areas with good cover and an abundance of perennial succulent herbs and/or fruit-bearing shrubs.

Management Area 11 (69,812 acres), also known as the Trail Creek Grizzly Bear Management Area (Refer to Trail Creek Geographic Unit in Chapter IV), consists of timber and nonforest lands capable of providing grizzly bear habitat.

The Area is located at the north end of Glacier View Ranger District, and will be formally classified within the administrative authorities of the Forest Service. Classification will assure National attention to continued intensive grizzly bear management and highlight the need for research funding.

Management Area 11A (27,476 acres*) consists of timber and nonforest lands capable of providing grizzly bear habitat located in the Bunker Creek area on the Spotted Bear Ranger District.

Management Area 11C (9,852 acres) consists of timberlands capable of providing grizzly bear habitat located on the southern portion of the Swan Lake Ranger District.

GOALS

11, 11A

Maintain and enhance grizzly bear habitat by implementing appropriate management and investment activities and controlling public access.

Manage for a habitat of approximately 40 percent security cover and about 60 percent open, with good geographic distributions of the following habitat components:

Burns - burns including high elevation areas that produce fruit-bearing shrubs.

* Includes proposed wilderness acres.

Management Areas 11 - 11C

Meadows - naturally occurring, open, concave, wet or dry sites at all elevations. These are particularly important at low elevation as spring forage areas.

Riparian Areas - all riparian areas that provide succulent vegetation suitable as bear food.

Ridgetops - Important as travel routes between other habitat components.

Shrubfields - essentially permanent areas of shrubs created by fire or snow pack at high elevation.

Sidehill Parks - naturally, open, sparsely timbered areas, productive for bear food.

Scree/talus - unstable loose rock areas, productive for bear food.

Timber - Must be adequate to provide connection between the above habitat components.

Management of other resources must be compatible with the grizzly bear management objectives of Management Areas 11 or 11A. The visual landscape may be altered. Nonmotorized recreational opportunities will be provided at current levels, but will not be encouraged and may be restricted if conflicts between recreationists and grizzly bear management occur.

11A In areas recommended for wilderness, maintain all wilderness values until Congress reaches a decision on wilderness additions. Total proposed wilderness within this Management Area is 9,985 acres.

11C Manage the Swan/Clearwater Divide as an area that provides a secure grizzly bear travel route between the Mission and Swan Mountain Ranges. Desired cover relationship is provided through vegetative manipulation including timber harvest and prescribed burning.

Management of other resources must be compatible with the grizzly bear management objectives of this Management Area. The visual landscape may be altered.

Management Areas 11-11C

STANDARDS	In addition to the Forest-wide Management Direction included in Chapter II of this Plan, the following standards will apply to this Management Area:
Wildlife and Fish	
11 through 11C	1. Adhere to the Forest-wide standards for grizzly bear management in occupied grizzly bear habitat.
11, 11A, 11C	1. Grizzly bear habitat component mapping and analysis, coordination and consultation with State and Federal wildlife management agencies will be required for all projects.
	2. Manage adjacent grizzly bear foraging areas (openings) only when previously cut unit sustains adequate hiding cover.*
11, 11A	1. Develop a Long-Range Grizzly Bear Habitat Activity Schedule, with all habitat components mapped and analyzed, prior to allowing any vegetative manipulation of grizzly bear habitat. Utilize this schedule to guide project planning.
	2. Provide the full range of habitat improvement practices, including prescribed fire, shrub planting, and timber harvest to maintain and or enhance the number and availability of habitat components, listed above. Consider the needs of the gray wolf and other endangered species in authorizing habitat improvement projects.
	3. Manage riparian areas to optimize grizzly travel security and forage production.
	4. Provide for security from human conflict through year-round closures of all newly constructed roads and closures of existing roads and trails as necessary to maintain the security of the area. Monitor and manage all human activity in the area.
11C	1. Provide and maintain hiding cover* over at least 70 percent of the area.

* Hiding cover is defined as the amount of cover to conceal at least 90 percent of an adult grizzly bear at 200 feet.

Management Areas 11-11C

11, 11B	1. While grizzly bear management and research is the primary management emphasis for this area, direction will recognize the needs of the existing gray wolf population and the potential existence of an occasional band of mountain caribou. 2. The Forest Service shall monitor gray wolf and mountain caribou population status.
<u>Recreation</u>	
11, 11A, 11C	1. Existing facilities will be maintained and resource damage mitigated through appropriate facility reconstruction. 2. Informational signing will be provided regarding the grizzly bear use of the area. 3. The construction of new trails or reopening of old trails will be evaluated on a case by case basis. 4. Trails may be closed if necessary to meet resource management objectives or protect the facility and/or other resources. 5. Nonmotorized recreation opportunities are provided in accordance with the Recreation Opportunity Spectrum classification of the areas.
11	1. Tuchuck and Red Meadow Campgrounds will remain open as long as no adverse effects occur to grizzly bears.
<u>Wilderness</u>	
11A	1. No action can occur in recommended wildernesses that will reduce the areas' wilderness attributes until Congress has made a decision on wilderness classification or otherwise specified how these areas will be managed.
<u>Range</u>	
11, 11A	1. Domestic livestock grazing is not compatible. Grazing permits will not be issued. 2. Temporary, occasional recreational stock use may be permitted but will not exceed 1982 levels. If conflicts between grizzly bear management objectives and

Management Areas 11-11C

recreational livestock use develop, the recreational livestock use will be prohibited.

11C

1. Permitted domestic livestock use (AUM's) will not be allowed to exceed the 1981 level of permitted use. The period of use by livestock will be adjusted to be compatible with use of the area by grizzly bears or the permitted use will be phased out.

Timber

11, 11A

1. Lands are classified as unsuitable for timber management, and timber harvest is not scheduled. Where lands are capable of good vegetative regeneration, timber harvest may occur to improve or maintain the proper relationships of cover to forage, or to provide a sustained yield of necessary grizzly bear habitat components.

11C

1. Lands are classified as suitable for timber management, and timber harvest will be scheduled; however, grizzly bear habitat needs will dictate the amount, seasonal timing of harvest, silvicultural systems, logging methods, reforestation and TSI (timber stand improvement) used.

2. The Long-Range Grizzly Bear Habitat Activity Schedule will guide timber harvest activities.

3. The seasonal timing of road construction, reconstruction and logging will be constrained as per the agreement between the Flathead and Lolo National Forests and Plum Creek Timber Company, Inc.

4. Reforestation will be accomplished in accordance with the bear management prescription for the area.

5. Timber Stand Improvement activities will be permitted to enhance timber values and volumes provided that adequate hiding cover can be maintained.

Water

11, 11A

1. Maintain long-term water quality to meet or exceed State water quality standards. To ensure meeting these standards, surface-disturbing activities will be monitored where this need is identified.

2. Refer to the Forest-wide standards under Water and Soils for Best Management Practices, Landtype

Management Areas 11-11C

Guidelines, and standards applicable to projects or activities within this Management Area.

3. All project proposals will be analyzed and evaluated to determine the potential water quantity and quality impacts. Mitigation measures will be developed to minimize adverse effects.

Visual Quality

11, 11A, 11C — 1. The visual quality of this Management Area will at least meet the modification visual quality objective.

Minerals

11, 11A, 11C — 1. Exploration and development activities allowed under the mining laws, Mining Act Use Regulations, and the Mineral Leasing Act will be in accordance with approved permits and plans of operation.

2. Oil and Gas lease stipulations will be applied within this Management Area by landtype as stated in the Landtype Guidelines (Appendix Q). Special stipulations may be necessary for certain activities because of the management goals for this area (refer to AFFECTED ENVIRONMENT, EVALUATION CRITERIA in Appendix O).

11 — 1. The Forest Service proposes to withdraw the unleased portions of this area from all forms of mineral entry for both locatable and leaseable minerals. The purpose of this withdrawal is to permit more time to study the effects of man's activities on grizzly bears. Oil and gas seismic activities will be permitted if this type of activity is compatible with bear management objectives. Seismic activities will provide more geologic data that will enable the Forest Service to do a better environmental analysis on the lease/no lease decision at the end of the 10-year period. Seismic projects will also allow the Forest Service to study the grizzly's reaction to oil and gas activities. Companies conducting seismic operations may be asked to co-sponsor these grizzly studies.

11A, 11C — 1. Where oil and gas leasing decisions have already been made, recommend the Threatened and Endangered Species Stipulations and Activity Coordination Stipulation for incorporation to oil and gas leases. Some general guidelines are as follows:

Management Areas 11-11C

- No seismic activity, new road construction, or drilling above 5,800 feet between October l to April 30 to protect denning grizzly bears.

- No seismic activity, new road construction, or drilling in flood plain and riparian areas during the primary bear-use periods (April l to July l and October l to November 30).

- In order to provide bear and wolf security areas, drilling, road construction, and other exploration activity should not occur simultaneously with timber sale activity in adjoining third order drainages.

Lands

11, 11A, 11C	1. Identify and attempt to acquire lands and interest in lands that provide key grizzly bear habitat components.
11, 11A	1. These Management Areas are avoidance areas for utility corridors (see Appendix J).
11C	1. These lands are not excluded from or need not be avoided by utility corridors (see Appendix J).

Facilities

Buildings

11, 11A, 11C	1. No permanent living facilities will be allowed. Temporary camps will be permitted outside of the April l to July l period.

Facilities

Roads

11, 11A, 11C	1. Road location and design will be responsive to grizzly bear habitat management needs. 2. Generally new roads will be local, low standard roads.
11	1. Local roads may be constructed for habitat improvement purposes and will be closed to motorized public use except to allow snowmobile access during the winter. 2. Apply motorized access restrictions from April 1 to November 30 to all roads except Trail Creek and the lower portion of Thoma Creek roads to provide security for grizzly bears. Access to Frozen Lake will be from the Kootenai National Forest.

Management Areas 11-11C

3. The Trail Creek Road (FDR #114) will be open to public use. The traffic service level will generally be Service Level C. Spot reconstruction of the Trail Creek Road will be done only to mitigate resource damage or correct safety hazards consistent with Service Level C.

11A

1. Local roads constructed for habitat improvement purposes will be closed year round to motorized public use.

2. Local road maintenance will be Level 1.

11C

1. Provide and maintain grizzly bear habitat security by road closures to maintain a maximum open road density at the 1981 level.

Prescribed Fire

11, 11A, 11C

1. Follow Forest-wide standards for fire management and refer to the Fire Management Direction in Appendix G.

11, 11A

1. Planned ignition prescribed fire may be used to enhance any habitat component. Prescribed fire objectives will be recommended by a wildlife biologist.

11C

1. Only planned ignitions for prescribed fire objectives are appropriate.

Protection

Fire Suppression

11, 11A, 11C

1. Follow Forest-wide standards for fire management and refer to the Fire Management Direction in Appendix G.

11, 11A

1. The appropriate suppression response will be compatible with designated grizzly bear habitat goals and objectives. Unplanned ignition prescribed fire procedures may be implemented on completion of site-specific plans.

11C

1. Wildfire suppression responses of confine and contain are appropriate where compatible with grizzly bear objectives.

Management Areas 11-11C

Research

11 1. A special effort will be made to conduct grizzly bear research and studies in this area. A special effort should be made to learn more about the effects of timber, mineral, and recreation activities on grizzly bear populations and their habitat.

Schedule of Management Practices (Average Annual Amount)

Management Practices	Units	Proposed Decade 1	Probable Decade 2
T & E Habitat Improvement	Acres	25.0	25.0
Clear Cut-Seed Cut	MMBF Acres	0.3 20.0	0.8 50.0
Salvage/Sanitation	MMBF Acres	0.3 200.0	0.3 180.0
Total Timber Harvest*	MMBF	0.6	1.1
Fuels Management	Acres	220.0	230.0
Silviculture/Stand Exams	Acres	650.0	650.0
Reforestation	Acres	20.0	50.0
Timber Stand Improvement	Acres	15.0	15.0
Road Construction	Miles	1.3	1.0
Road Reconstruction	Miles	0.8	0.8

* The Proposed 10-year timber sale offerings schedule is presented in Appendix M.

Monitoring and Evaluation Requirements

The monitoring requirements from Chapter V that are applicable to these Management Areas are: 1, 2, 4, 5, 8, 10, 13, 14, 16-25, and 48-59. The procedure outlined in Chapter V will be followed to evaluate the data gathered during monitoring.

MANAGEMENT AREAS 12, 12A *[12A changed to 3A per Amendment 22]*

DESCRIPTION

Management Area 12 (45,401 acres*) includes riparian areas consisting of aquatic, riparian, and a portion of terrestrial ecosystems along most perennial streams, lakes, ponds, marshlands, bogs and some important seasonal flow streams.

Riparian management areas extend a variable distance from the bankfull edge (2 year flood height). Riparian management areas along streams vary as displayed in Figures III-1 and III-2, and as follows:

1) steep side slopes (40% +) - average approximately 200 feet wide (generally 100 feet each side of stream),
2) moderate side slopes (20-40%) - average 400 feet wide, (generally 200 feet each side of stream), and
3) gentle side slopes (0-20%) - average 600 feet wide (generally 300 feet each side of stream).

The Geographic Unit maps in Chapter IV and the Management Area map shows only these delineations that were made for the larger river flood plains, wetlands or poorly drained lacustrine landtypes. The smaller riparian management areas along streams are not shown on the map.**

Management Area 12 generally excludes those lower order streams with typically a seasonal flow, a high gradient, narrow riparian zones, and no resident fish populations. These excluded streams usually are managed as MA 17. Management Area 12 also excludes isolated seeps, springs and seasonally wet areas not contiguous with other areas meeting the description of MA 12. Riparian values for these excluded areas will be managed by following the Best Management Practices under Water in Chapter II.

GOALS

Manage riparian areas throughout the Forest to enhance vegetation and wildlife diversity and maintain or enhance water quality and fisheries. Emphasize water and soil protection and old growth habitat. Management of other resources must be compatible with the riparian habitat

* Includes proposed wilderness acres.

** Project level analysis and mapping will determine the long term Management Area 12 boundary for each drainage.

Management Areas 12, 12A

management standards. All riparian areas should be mapped and defined in permanent stand records during the first planning decade.

In areas recommended for wilderness, maintain all wilderness values until Congress reaches a decision on wilderness additions. Total proposed wilderness within this Management Area is 47 acres.

STANDARDS

In addition to the Forest-wide Management direction included in Chapter II of this Plan, the following Standards will apply to this Management Area:

The specific management direction for research natural areas, including research activities, will be incorporated as Forest Plan amendments upon establishment of the RNA.

A riparian area analysis will be part of the project analysis. This will be done on each riparian ecosystem to define its physical limits and current conditions and to specify the desired future conditions necessary to support any proposed management actions in this Management Area.

Wildlife and Fish

1. Adhere to the Forest-wide standards for grizzly bear management in occupied grizzly bear habitat.

2. Management of riparian areas must be coordinated with the management of adjacent areas to ensure the protection of T&E species.

3. Ensure proper distribution and quantity of old-growth habitat for each watershed.

4. Thermal and hiding cover will be provided by old growth. The continued maintenance of these cover types will facilitate use of the riparian areas as travel corridors.

5. Openings made for the purpose of maintaining seral tree species will generally be less than 2 acres.

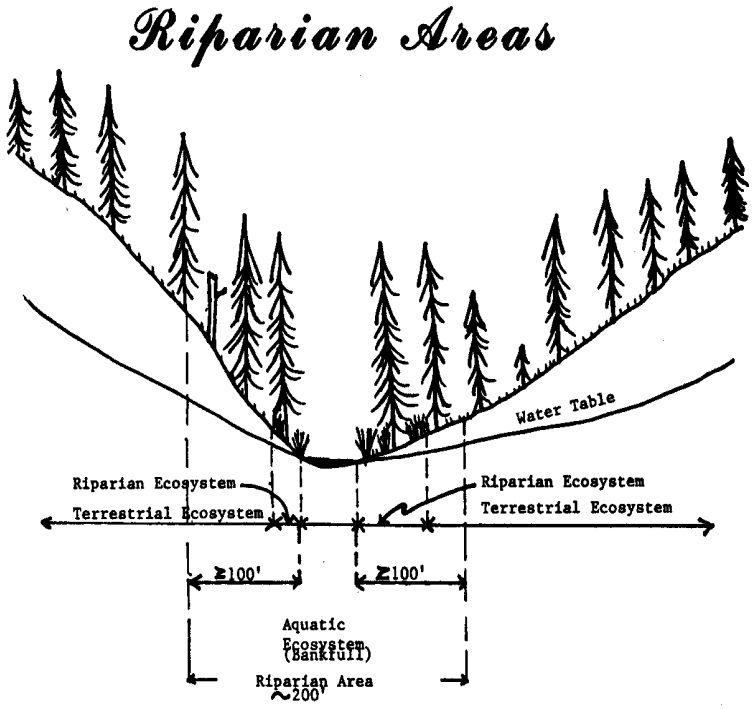

Figure III-1. Riparian area along a typical, small, high gradient, perennial stream with steep sideslopes.

Flathead National Forest

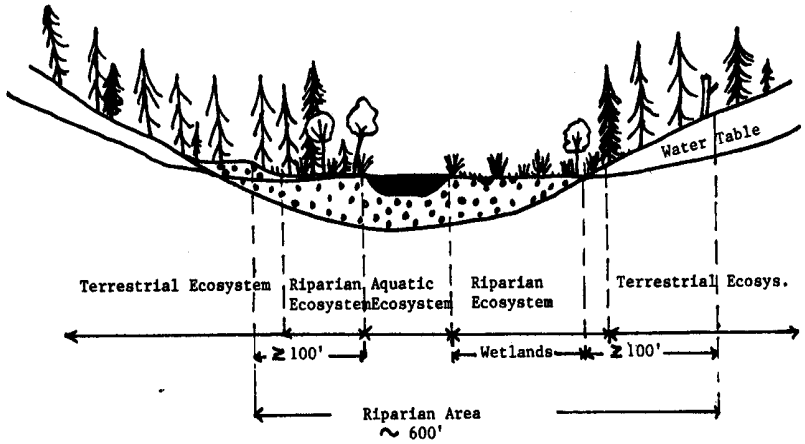

Figure III-2. Riparian area along a typical, large, low gradient, perennial stream with wide floodplain and gentle sideslopes.

Flathead National Forest

Management Areas 12, 12A

6. Maintain adequate tree and shrub vegetation to provide bank and instream thermal cover unless project analysis indicates a need to reduce cover to meet fish or wildlife habitat objectives. Instream cover is necessary to ensure hiding and resting areas for fish and development sites for fish-food organisms.

7. Sufficient trees will be maintained within 30 feet of the streams to provide snag recruitment to create pools and enhance spawning gravels for fish habitat.

8. Encourage research to determine habitat improvement needs.

9. If wildlife funds are not available, in sale areas K-V funds may be used if available to accomplish mitigating projects. Activities include:

a. Opening selected debris jams to provide fish passage.

b. Replacing culverts to provide fish passage or providing passage through existing culverts.

c. Removing selected debris from stream channels.

d. Revegetating exposed soils that could place sediments in streams.

e. Make use of habitat improvement techniques where the potential for enhancement exists.

10. Down woody material will be maintained within the riparian area (not in the stream) to the level indicated in the Forest-wide standards.

11.Maintain minimum streamflow needed to sustain the biological community.

Recreation

1. Generally, trails will not be constructed in riparian areas except as needed to cross the area.

2. Existing trails should be relocated outside of riparian areas if there are erosion problems that cannot be mitigated.

Management Areas 12, 12A

3. Off-road vehicle use, except by snowmobiles, is generally incompatible except on roads or trails.

4. Carefully evaluate any new developed recreation proposals to ensure the riparian area is protected.

Timber

1. Lands are classified as unsuitable for timber management, and timber harvest will not be scheduled.

2. Harvest timber only if riparian wildlife and fish habitat values can be maintained or improved. When applied, silvicultural systems should be uneven-aged (single tree selection or group tree selection). Groups should be no larger than 2 acres in size. Cone collections and tree improvement projects are also possible.

3. Active sales will be inspected as often as needed to ensure protection of the riparian resource.

4. Vegetation diversity is an inherent characteristic of the riparian area and should be achieved through management that favors tree species, age, and size variation. This management will aid in ensuring that the range of possible habitats is provided.

5. Present and future needs for snags and down woody material must be assured before salvage logging or firewood cutting will be permitted.

6. To protect the riparian areas and water quality exercise caution when using yarding and road building equipment in the following Sediment Caution Zones:

a. within 700 feet of streams on 60% + slopes,
b. within 350 feet of streams on 40-60% slopes,
c. within 325 feet of streams on 20-40% slopes, and
d. within 300 feet of streams on 0-20% slopes.

(Also refer to Figure II-1 on page II-43.)

These Caution Zones may overlap between the riparian area and adjacent Management Areas.

Management Areas 12, 12A

Visual Quality	1. Partial retention will be the minimum visual quality objective. Because of the limited size of this Management Area, the overall VQO for a drainage will be largely determined by the adjacent Management Area.
Range	1. If a conflict occurs between riparian values and livestock use, it must be resolved by permittee action and cooperation. If the conflict cannot be resolved or mitigated, livestock numbers will be reduced or allotment closed. Range improvements may be constructed for resource protection and to mitigate major conflicts with adjacent private or public interest.
Soil	1. Protect soil productivity. 2. Provide soil technical support (inventory and interpretation) for environmental assessments, project fires, and implementation of landtype standards and guidelines. 3. Soil surveys will be to an Order II level of detail.
Water	1. Maintain long-term water quality to meet or exceed State water quality standards. To ensure meeting these standards, surface-disturbing activities will be monitored where this need is identified. 2. Refer to the Forest-wide standards under Water and Soils for Best Management Practices, Landtype Guidelines, and standards applicable to projects or activities within this Management Area. 3. All project proposals will be analyzed and evaluated to determine the potential water quantity and quality impacts. Mitigation measures will be developed to minimize adverse effects.
Minerals	1. Exploration and development activities allowed under the mining laws, Mining Act Use Regulations, and the Mineral Leasing Act will be in accordance with approved permits and plans of operation. 2. Oil and Gas lease stipulations will be applied within this Management Area by landtype as stated in the Landtype Guidelines (Appendix Q). Special stipulations may be necessary for certain activities because of the

Management Areas 12, 12A

management goals for this area (refer to AFFECTED ENVIRONMENT, EVALUATION CRITERIA in Appendix O).

Facilities

Roads

1. New roads will not be constructed in riparian management areas except as needed to cross the area. New roads which must cross riparian areas will do so with as little impact to the stream or lake as is reasonable and generally should not parallel streams within the Sediment Caution Zone.

2. New roads will generally not be built within one-half mile of lakes.

3. Stream crossings will be individually evaluated to ensure fish passage.

4. Installation of bridges and culverts within the riparian area will be coordinated with the Montana Department of Fish, Wildlife, and Parks. Roadbuilding and timber harvest machinery will be restricted from stream channels, immediate banks and wet sites to protect water quality. Fish movement will not be restricted. This will be accomplished by managing instream debris and by assuring fish passage, where needed, through culverts and bridges. In-channel projects, (building bridges or culverts) will generally be scheduled for periods when trout eggs and fry are not in the gravels. Each site will be considered on an individual basis.

5. Specifically designed and built structures will be required on each stream crossing. Disturbed surfaces will be stabilized after a structure is built at each stream crossing.

6. Where possible, stream channels will be dewatered, at the site, during major bridge and culvert installations. Other measures such as coffer dams, settling basins, and filters should be considered for inclusion in construction contracts. Each site will be considered on a case-by-case basis.

7. Active construction projects in riparian areas should be inspected as often as needed to ensure protection of the riparian resource.

Management Areas 12, 12A

8. Road closures will be implemented as necessary to protect riparian wildlife and fish habitat values, to be compatible with the adjacent Management Area direction, to protect other resources, or to ensure public safety.

9. Special-use applications will be considered individually and special stipulations attached for design and construction of any facilities. Generally occupancy in the riparian area will not be permitted if there are reasonable alternatives.

Wilderness

1. No action can occur in recommended wildernesses that will reduce the areas' wilderness attributes until Congress has made a decision on wilderness classification or otherwise specified how these areas will be managed.

Prescribed Fire

1. Follow Forest-wide standards for fire management and refer to Fire Management Direction in Appendix G.

2. Prescribed fire can be used to reduce hazards and provide site preparation if compatible with riparian objectives.

Protection

Fire Suppression

1. Follow Forest-wide standards for fire management and refer to Fire Management Direction in Appendix G.

2. Wildfire originating in this area will be controlled. District Ranger approval is required to implement suppressive tactics that involve application of aerial retardant or mechanical soil displacement.

Insect and Disease

1. Pesticides will not be used in riparian areas.

Lands

1. These lands are not excluded from or need not be avoided by utility corridors (see Appendix J).

Management Areas 12, 12A

Schedule of Management Practices (Average Annual Amount)

Management Practices	Units	Proposed Decade 1	Probable Decade 2
Trail Construction/Reconstruction	Miles	0.2	0.2
Soil & Water Improvement	Acres	82.0	82.0
Fish Habitat Improvement	Acres	71.0	71.0
Wildlife Habitat Improvement	Acres	78.0	78.0
Road Construction	Miles	0.6	0.2
Road Reconstruction	Miles	1.1	1.1
Range Improvement	Acres	25.0	25.0

Monitoring and Evaluation Requirements

The monitoring requirements from Chapter V that are applicable to these Management Areas are: 1, 2, 4, 5, 8, 10, 13-28, 30, 38-41, 45, and 47-59. The procedure outlined in Chapter V will be followed to evaluate the data gathered during monitoring.

MANAGEMENT AREAS 13, 13A, 13C, 13D *[13B changed to 3A per Amendment 22]*

DESCRIPTION

The following Management Areas consist of roaded and unroaded lands capable of providing mule deer and elk winter habitat.

Management Area 13 (27,202 acres*) consists of timberlands capable of providing mule deer and elk winter habitat.

Management Area 13A (13,176 acres) consists of nonforest lands capable of providing mule deer and elk winter habitat.

Management Area 13C (738 acres) consists of timberlands capable of providing mule deer and elk winter habitat located in the Noisy Face Geographic Unit. These lands have high scenic value due to the visual importance of this area to communities in the Flathead Valley.

Management Area 13D (5,662 acres) consists of timber and nonforest lands capable of providing mule deer and elk winter habitat located along the west face of Columbia Mountain. These lands have high scenic value due to the visual importance of this area to the communities in the Flathead Valley.

GOALS

13 through 13D

Provide the size, age, diversity, and distribution of habitat units (both cover and forage) suitable for mule deer and elk winter habitat.

Management of other resources will generally be compatible with the mule deer and elk winter habitat management goals. All summer recreation activities in a roaded natural-appearing environment are compatible. Winter recreation activities will not be encouraged and may be restricted if conflicts between recreationists and mule deer and elk management occur.

Timber harvest can be used to improve or maintain the relationships of cover to forage. Prescribed burning is also an acceptable habitat improvement method.

* Includes proposed wilderness acres.

Management Areas 13-13D

13	In areas recommended for wilderness, maintain all wilderness values until Congress reaches a decision on wilderness additions. Total proposed wilderness within this Management Area is 212 acres.
13C, 13D	Manage for mule deer and elk winter habitat and maintain a landscape in which management activities are not dominant.
STANDARDS	In addition to the Forest-wide Management Direction included in Chapter II of this Plan, the following Standards will apply to this Management Area: The specific management direction for Research Natural Areas, including research activities will be incorporated as Forest Plan amendments upon establishment of the RNA.
<u>Wildlife and Fish</u> 13, 13A	1. Complete a Long-Range Mule Deer and Elk Winter Range Activity Schedule for each winter range unit. Utilize this schedule to guide project planning. 2. Implement the full range of wildlife habitat improvements. 3. Consider those portions of this Management Area separated by one-half mile or more as separate winter ranges. 4. To be acceptable habitat, each separate winter range area must have 30 percent of the area in winter thermal cover (Thermal cover is defined as the point in the growth of a stand of evergreen coniferous trees when it has a minimum average height of 60 feet and has a minimum crown canopy of 70 percent). 5. Adhere to the Forest-wide Standards for Grizzly Bear management in occupied Grizzly Bear habitat.
13C, 13D	6. Implement those wildlife habitat improvements that are consistent with the visual quality objective.
<u>Visual Quality</u> 13, 13A	1. The VQO (Visual Quality Objective) will generally be modification.

Management Areas 13-13D

13C, 13D	2. The visual quality of these Management Areas will meet a partial retention visual quality objective.
<u>Recreation</u>	
Trails	
13, 13A, 13C	1. Maintenance or construction of hiking trails is compatible, but ski trails will be evaluated on a case-by-case basis. Trail closures may be implemented to meet management area objectives.
<u>Wilderness</u>	
13	1. No action can occur in recommended wildernesses that will reduce the areas' wilderness attributes until Congress has made a decision on wilderness classification or otherwise specified how these areas will be managed.
<u>Water</u>	
13, 13A, 13C, 13D	1. Maintain long-term water quality to meet or exceed State water quality standards. To ensure meeting these standards, surface-disturbing activities will be monitored where this need is identified.
	2. Refer to the Forest-wide standards under Water and Soils for Best Management Practices, Landtype Guidelines, and standards applicable to projects or activities within this Management Area.
	3. All project proposals will be analyzed and evaluated to determine the potential water quantity and quality impacts. Mitigation measures will be developed to minimize adverse effects.
<u>Range</u>	
13, 13A, 13C, 13D	1. Existing domestic livestock use will be permitted to continue; however, adjustments in AUM's may be made to ensure compatibility with mule deer and elk winter range management goals.
<u>Timber</u>	
13, 13C	1. Lands are classified as suitable for timber management, and timber harvest will be scheduled.
	2. The scheduling of timber harvests designed to provide mule deer and elk winter habitat will be specified by the Long-Range Mule Deer and Elk Winter Range Activity Schedule.

Management Areas 13-13D

3. Timber stand improvement projects will be designed to meet winter range objectives.

13A, 13D

1. Lands are classified as unsuitable for timber management, and timber harvest will not be scheduled.

Minerals

13, 13A, 13C, 13D

1. Exploration and development activities allowed under the mining laws, Mining Act Use Regulations, and the Mineral Leasing Act will be in accordance with approved permits and plans of operations.

2. Oil and Gas lease stipulations will be applied within this Management Area by landtype as stated in the Landtype Guidelines (Appendix Q). Special stipulations may be necessary for certain activities because of the management goals for this area (refer to AFFECTED ENVIRONMENT, EVALUATION CRITERIA in Appendix O).

Lands

13, 13A, 13C, 13D

1. Special uses, land exchanges, and rights-of-way proposals will be carefully reviewed to ensure maintenance and enhancement of mule deer and elk winter habitat. The goal is to maintain the quantity or quality of winter habitat through the landownership adjustment program.

2. These lands are not excluded from or need not be avoided by utility corridors (see Appendix J).

Facilities

Roads

13, 13A, 13C, 13D

1. Roads will be closed to motorized vehicles December 1 to May 15 if necessary to provide mule deer and elk undisturbed use of winter range.

2. Additional road closures may be implemented to meet adjacent Management Area objectives and/or to protect resources or the facility.

3. Road construction and reconstruction activities will be restricted if adverse impacts occur to mule deer and elk.

13, 13A

1. In the Emery Creek Geographic Unit, apply motorized access restrictions from December 1 to July 1 as necessary to provide mule deer and elk undisturbed use of winter range and calving areas.

Management Areas 13-13D

Prescribed Fire

13, 13A, 13C, 13D — 1. Follow Forest-wide standards for fire management and refer to the Fire Management Direction in Appendix G.

13A — 1. Cost-effective application of prescribed fire should be planned on a periodic basis that maintains and enhances habitat components.

Protection

Fire Suppression — 1. Follow Forest-wide standards for fire management and refer to the Fire Management Direction in Appendix G.

2. The appropriate suppression response will be compatible with the goals of mule deer and elk winter habitat management.

Schedule of Management Practices (Average Annual Amount)

Management Practices	Units	Proposed Decade 1	Probable Decade 2
Soil & Water Improvement	Acres	8.0	8.0
Wildlife Habitat Improvement	Acres	45.0	61.0
T & E Habitat Improvement	Acres	90.0	90.0
Clear Cut-Seed Cut	MMBF Acres	5.5 370.0	4.4 296.0
Shelterwood-Removal Cut	MMBF Acres	0.8 50.0	0.0 0.0
Salvage/Sanitation	MMBF Acres	0.5 350.0	0.3 200.0
Total Timber Harvest*	MMBF	6.8	4.7
Fuels Management	Acres	770.0	496.0
Silviculture/Stand Exams	Acres	2,135.0	2,135.0
Reforestation	Acres	420.0	296.0
Timber Stand Improvement	Acres	400.0	400.0
Road Construction	Miles	3.5	2.5
Road Recontruction	Miles	1.1	1.1
Range Improvement	Acres	5.0	5.0

* The proposed 10-year timber sale offerings schedule is presented in Appendix M.

Monitoring and Evaluation Requirements

The monitoring requirements from Chapter V that are applicable to these Management Areas are: 1, 2, 4, 5, 8, 10-14, 16-25, 30, 31, 41, and 48-59. The procedure outlined in Chapter V will be followed to evaluate the data gathered during monitoring.

MANAGEMENT AREA 14

DESCRIPTION

Management Area 14 (8,020 acres) consists of land designated as the Coram Experimental Forest by the Chief of the Forest Service in 1933. It is within the boundaries of the Hungry Horse Ranger District. The Experimental Forest is managed under Supplement No. 2, Memorandum of Understanding, dated April 1, 1983, with the Intermountain Forest and Range Experiment Station. It contains an 839-acre Research Natural Area. Coram is also closed as a Biosphere Reserve within the UNESCO Man and Biosphere Program to increase its usefulness to man's understanding of the environment.

GOALS

Continue management within the framework of the Memorandum of Understanding that emphasizes research to provide ecological and silvicultural information needed to manage western larch forests. The Hungry Horse Ranger District Ranger is responsible for carrying out the terms of the agreement. The Director of Intermountain Forest and Range Experiment Station is responsible for all research activities on the Experimental Forest.

The Research Natural Area will be managed as such with public use discouraged, no transportation system and no forest products removed.

STANDARDS

In addition to the Forest-wide Management Direction included in Chapter II of this Plan, the following Standards will apply to this Management Area:

<u>Recreation</u>

1. Do not permit permanent recreation improvements unless for research.

2. Do not permit overnight camping.

3. Recreation activities such as fishing, berrypicking, and picnicking are permitted.

<u>Visual Quality</u>

1. No visual quality objectives are established for this area.

<u>Wildlife and Fish</u>

1. Research activities will consider improving wildlife and fish habitat to meet research objectives.

2. Adhere to the Forest-wide standards for grizzly bear management in occupied grizzly bear habitat.

Management Area 14

Range	1. No domestic livestock or transportation stock grazing will be allowed.
Timber	1. Research on all timber management activities is appropriate. The station researchers are responsible for planning activities and the Hungry Horse District Ranger is responsible for sale preparation and administration.
	2. Lands are classified as unsuitable for timber management, and timber harvest will not be scheduled.
Water	1. Maintain long-term water quality to meet or exceed State water quality standards. To ensure meeting these standards, surface-disturbing activities will be monitored where this need is identified.
	2. Refer to the Forest-wide standards under Water and Soils for Best Management Practices, Landtype Guidelines, and standards applicable to projects or activities within this Management Area.
	3. All project proposals will be analyzed and evaluated to determine the potential water quantity and quality impacts. Mitigation measures will be developed to minimize adverse effects
Facilities	1. Roads will be closed as necessary to protect ongoing research and studies.
Minerals	1. The Experimental Forest is withdrawn from mineral development under the mining laws but not from leasing under the mineral leasing laws.
	1. Exploration and development activities allowed under the mining laws, Mining Act Use Regulations, and the Mineral Leasing Act will be in accordance with approved permits and plans of operation.
	2. Oil and Gas lease stipulations will be applied within this Management Area by landtype as stated in the Landtype Guidelines (Appendix Q). Special stipulations may be necessary for certain activities because of the management goals for this area (refer to AFFECTED ENVIRONMENT, EVALUATION CRITERIA in Appendix O).

Management Area 14

Prescribed Fire	1. Prescribed fire may be used in support of research activities.
Protection	
Fire Suppression	1. The objective of fire suppression will be prompt cost effective control of all wildfires.
Lands	1. This Management Area is an avoidance area for utility corridors (see Appendix J).

Schedule of Management Practices (Average Annual Amount)

No management practices are scheduled.

Monitoring and Evaluation Requirements

The monitoring requirements from Chapter V that are applicable to this Management Area are: 1, 2, 8, 10, 13, 14, 16-25, 38, and 48-59. The procedure outlined in Chapter V will be followed to evaluate the data gathered during monitoring.

MANAGEMENT AREAS 15, 15A, 15B, 15C, 15D, 15E

DESCRIPTION

The following Management Areas consist of roaded timberlands located throughout the Flathead National Forest.

Management Area 15 (492,704 acres*) consists of timberlands where timber management with roads is economical and feasible. [*Note: Swan River and LeBeau RNAs changed to Management Area 3A*]

Management Area 15A (11,456 acres*) consists of timberlands where timber management with roads is economical and feasible, but special considerations must be made for sensitive soils. These lands are in the Skyland/Puzzle Creek area of the Hungry Horse Ranger District.

Management Area 15B (2,054 acres) consists of timberlands where timber management with roads is economical and feasible, but special consideration must be made for the cross-country skiing use of the area. These lands are located near Essex on the Hungry Horse Ranger District and in Round Meadows on the Tally Lake Ranger District.

Management Area 15C (8,166 acres) consists of timberlands where timber management with roads is economical and feasible, and are key white-tailed deer summer range. These areas are located immediately north and east of Lindbergh Lake on Swan Lake Ranger District.

Management Area 15D (1,999 acres) consists of timberlands where timber management with roads is economical and feasible, but visual sensitivity must also be considered. These lands are located in the Island Geographic Unit on Swan Lake Ranger District and can readily be seen from Lake Mary Ronan.

Management Area 15E (8,900 acres) consists of timberlands where timber management with roads is economical and feasible, and are adjacent to key mule deer and elk winter range habitat Management Areas (MA 13). These areas are located in the Spotted Bear River drainage.

* Includes proposed wilderness acres.

Management Areas 15-15E

GOALS

15 through 15E	Emphasize cost-efficient production of timber while protecting the productive capacity of the land and timber resource. Other resources will be managed in a manner consistent with the timber management goals. The visual landscape may be altered. Roaded natural-appearing recreation opportunities environment will be provided.
15	In areas recommended for wilderness, maintain all wilderness values until Congress reaches a decision on wilderness additions. Total proposed wilderness within this Management Area is 983 acres.
15A	Mitigation measures will be incorporated to protect sensitive soils. In areas recommended for wilderness, maintain all wilderness values until Congress reaches a decision on wilderness additions. Total proposed wilderness within this Management Area is 388 acres.
15B	Special consideration will be given to the cross-country skiing recreational use of the area.
15C	Special consideration will be given to the white-tailed deer summer range within this Management Area.
15D	Special consideration will be given to visual management.
15E	Special consideration will be given to the seasonal habitat requirements of elk within these units and the contiguous winter ranges.

STANDARDS

In addition to the Forest-wide Management Direction included in Chapter II of this Plan, the following standards will apply to this Management Area:

<u>Timber</u>

15 through 15E	1. Lands are classified as suitable for timber management, and timber harvest will be scheduled.

Management Areas 15-15E

2. Maintain or create diverse patterns of vegetation, using primarily even-aged silvicultural systems. Include precommercial thinning and intermediate harvest for stocking and species composition control. A variety of special wood products will also be made available through salvage sales, small sales, and permits, and the incidental unscheduled volume associated with large sales.

3. As directed by the Northern Regional Guide, generally keep timber harvest units to 40 acres in size or less. Due to existing timber stand distribution; each Ranger District will find it necessary to annually exceed the size of opening limits defined by the Regional Guides on a few timber harvest units. Standard In-Service review, approval or denial, and public notification procedures will be followed.

4. Use timber stand improvement practices to maintain horizontal stand diversity.

5. Project design will determine the most cost-efficient action that protects the productive capacity of the area and meets Management Area objectives. Decisions should consider all treatments needed over a timber rotation.

15B

1. Design timber sales to be consistent with cross-country ski activities.

2. Do not allow winter logging at Essex in recognition of the cross-country skiing recreational use.

Wilderness

15, 15A

1. No action can occur in recommended wildernesses which will reduce the areas' wilderness attributes until Congress has made a decision on wilderness classification or otherwise specified how these areas will be managed.

Recreation

15 through 15E

1. Trail maintenance and construction are compatible so long as the timber management objectives are met.

Management Areas 15-15E

Visual Quality

15 through 15C, 15E	1. The VQO (Visual Quality Objective) will generally be modification or maximum modification.
15D	1. Modification visual quality objectives will generally be met unless more restrictive VQO's can be achieved without significantly increasing costs or reducing timber volume and future management options.

Wildlife and Fish

15 through 15E	1. Adhere to the Forest-wide Standards for Grizzly Bear management in occupied Grizzly Bear habitat.
15C	1. Maintain white-tailed deer summer range habitat units (cover/forage areas) at 20 acres or less. 2. Manage to provide vegetation manipulation that maintains or enhances white-tailed deer summer habitat condition while emphasizing timber management.
15E	1. Manage to provide vegetation that maintains the variety of habitat requirements compatible with adjacent Management Area 13. 2. Be aware of the early spring and late winter security requirements of elk in this Management Area.

Range

15C	1. Domestic livestock grazing is compatible to the extent that the pothole environment, an important white-tailed deer summer habitat component, can be protected.

Water

15 through 15E	1. Maintain long-term water quality to meet or exceed State water quality standards. To ensure meeting these standards, surface-disturbing activities will be monitored where this need is identified. 2. Refer to the Forest-wide standards under Water and Soils for Best Management Practices, Landtype Guidelines, and standards applicable to projects or activities within this Management Area.

Management Areas 15-15E

3. All project proposals will be analyzed and evaluated to determine the potential water quantity and quality impacts. Mitigation measures will be developed to minimize adverse effects.

Minerals

15 through 15E

1. Exploration and development activities allowed under the mining laws, Mining Act Use Regulations, and the Mineral Leasing Act will be in accordance with approved permits and plans of operation.

2. Oil and Gas lease stipulations will be applied within this Management Area by landtype as stated in the Landtype Guidelines (Appendix Q). Special stipulations may be necessary for certain activities because of the management goals for this area (refer to AFFECTED ENVIRONMENT, EVALUATION CRITERIA in Appendix O).

Facilities

15

1. In Upper Porcupine and Whitetail drainages restrict motorized road access as necessary to provide for elk summer habitat.

15C

1. To allow white-tailed deer optimum dispersal and use of summer range, apply motorized road access restrictions to local roads; however, snowmobile use is permitted.

Soils

15A

1. Provide special protection measures for the sensitive soils in the Skyland/Puzzle Creek area.

Prescribed Fire

15 through 15E

1. Follow Forest-wide standards for fire management and refer to Fire Management Direction in Appendix G.

2. Planned ignition prescribed fire may be utilized to reduce hazards from activity caused fuel concentrations and to maintain or enhance vegetative components or wildlife habitat. Hazard reduction and site preparation broadcast burning units should be designed to reduce risk of escape and associated costs.

Management Areas 15-15E

Protection

Fire Suppression

15 through 15E

1. Follow Forest-wide standards for fire management and refer to Fire Management Direction in Appendix G.

2. The appropriate suppression response will be compatible with the resource goals of this Management Area. The contain and confine response options may be utilized on an economic basis only during pre or post-season conditions.

15A

1. District Ranger approval is required for heavy equipment use in any suppression action, and potential rehabilitation needs will be evaluated.

Lands

15 through 15E

1. These lands are not excluded from or need not be avoided by utility corridors (see Appendix J).

Schedule of Management Practices (Average Annual Amount)

Management Practices	Units	Proposed Decade 1	Probable Decade 2
Trail Construction/ Reconstruction	Miles	0.2	0.2
Soil & Water Improvement	Acres	40.0	40.0
Wildlife Habitat Improvement	Acres	40.0	46.0
Clear Cut-Seed Cut	MMBF Acres	81.5 5,576.0	89.1 5,066.0
Shelterwood-Removal Cut	MMBF Acres	1.0 180.0	1.8 347.0
Salvage/Sanitation	MMBF Acres	2.7 1,144.0	1.4 1,020.0
Total Timber Harvest*	MMBF	85.2	92.3
Fuels Management	Acres	6,900.0	6,433.0
Silviculture/Stand Exams	Acres	51,000.0	51,000.0
Reforestation	Acres	5,756.0	4,903.0
Timber Stand Improvement	Acres	2,170.0	2,170.0
Road Construction	Miles	40.0	29.0
Road Reconstruction	Miles	13.0	13.0
Range Improvement	Acres	300.0	300.0

* The proposed 10-year timber sale offerings schedule is presented in Appendix M.

Monitoring and Evaluation Requirements

The monitoring requirements from Chapter V that are applicable to these Management Areas are: 1, 2, 4, 5, 8, 10, 13, 14, 16-25, 30, 31, 41, and 48-59. The procedure outlined in Chapter V will be followed to evaluate the data gathered during monitoring.

MANAGEMENT AREAS 16, 16A, 16B, 16C

DESCRIPTION

The following Management Areas consist of unroaded timberlands throughout the Flathead National Forest.

Management Area 16 (17,767 acres*) consists of timberlands where timber management is feasible through the use of aerial logging systems. The lands are generally steep breaklands where roading may be economically prohibitive or environmentally unsound.

Management Area 16A (1,722 acres) consists of timberlands where timber management is feasible through the use of aerial logging systems with special consideration for sensitive soils and watershed values. This unit consists of steep breaklands on the Hungry Horse Ranger District in the Skyland/Puzzle Creek area.

Management Area 16B (312 acres) consists of timberlands where timber management is feasible through the use of aerial logging systems with consideration for high recreation values and winter cross-country ski use. This unit consists of steep breaklands on the Hungry Horse District near Essex.

Management Area 16C (443 acres) consists of timberlands where timber management is feasible through the use of aerial logging systems, that are adjacent to key mule deer and elk winter range habitat Management Areas (MA 13). These areas are located in the Spotted Bear River drainage.

GOALS

16 thru 16C

Emphasize cost-efficient production of timber while protecting the productive capacity of the land and timber resource. Roadless logging methods will be used.

Other resources will be managed in a manner consistent with the timber management goals. The visual landscape may be altered. Dispersed recreation opportunities in an unroaded environment will be provided.

* Includes proposed wilderness acres.

Management Areas 16-16C

16	In areas recommended for wilderness, maintain all wilderness values until Congress reaches a decision on wilderness additions. Total proposed wilderness within this Management Area is 678 acres.
16A	Mitigation measures will be incorporated to protect the sensitive soils.
GOALS	
16B	Special consideration will be given to the recreational values of the area.
16C	Special consideration will be given to the seasonal habitat requirements of elk within these units.
STANDARDS	In addition to the Forest-wide Management Direction included in Chapter II of this Plan, the following Standards will apply to this Management Area:
<u>Timber</u>	
16 thru 16C	1. Lands are classified as suitable for timber management, and timber harvest will be scheduled.
	2. Use primarily even-aged regeneration harvests emphasizing natural regeneration with no species or stocking control (i.e., thinning and weeding) unless it is cost effective to do so.
	3. On the ground investigation and site specific economic analysis for a specific project will determine whether timber harvesting will utilize roaded or unroaded systems.
	4. Generally, as directed by the Northern Regional Guide, keep timber harvest units to 40 acres in size or less. Due to existing timber stand distribution and topographic features, it may be necessary to exceed the size of opening limits defined by the Northern Regional Guide on a few timber harvest units annually. Standard In-Service review, approval or denial, and public notification procedures will be followed.
	5. Natural regeneration will be emphasized. Artificial reforestation will be used if necessary to meet tree-stocking objectives within 5 years of site preparation.

Management Areas 16-16C

16B	1. In recognition of the cross-country skiing recreational use at Essex, do not allow winter logging.
	2. Design timber sales to be consistent with cross-country ski activities.
16C	1. Timber sale design will recognize the specific elk habitat component possessed by those units and its contributory value to adjacent Management Areas.
<u>Wilderness</u>	
16	1. No action can occur in recommended wildernesses that will reduce the areas' wilderness attributes until Congress has made a decision on wilderness classification or otherwise specified how these areas will be managed.
<u>Recreation</u>	
16 thru 16C	1. Trail maintenance and construction are compatible as long as the timber management objectives are met.
<u>Visual Quality</u>	
16 thru 16C	1. The visual quality objective will generally be modification or maximum modification.
<u>Wildlife and Fish</u>	
16 thru 16C	1. Adhere to the Forest-wide standards for grizzly bear management in occupied grizzly bear habitat.
16C	1. Project proposals will be analyzed to determine the specific elk habitat component possessed by the unit, and timber harvest plans will recognize these values in sale design.
<u>Range</u>	
16 thru 16C	1. These management areas are not suitable for permitted grazing by domestic livestock. Incidental and permitted recreational stock grazing is compatible.
Water	
16 thru 16C	1. Maintain long-term water quality to meet or exceed State water quality standards. To ensure meeting these standards, surface-disturbing activities will be monitored where this need is identified.

Management Areas 16-16C

2. Refer to the Forest-wide standards under Water and Soils for Best Management Practices, Landtype Guidelines, and standards applicable to projects or activities within this Management Area.

3. All project proposals will be analyzed and evaluated to determine the potential water quantity and quality impacts. Mitigation measures will be developed to minimize adverse effects.

Minerals
16 thru 16C

1. Exploration and development activities allowed under the mining laws, Mining Act Use Regulations, and the Mineral Leasing Act will be in accordance with approved permits and plans of operation.

2. Oil and Gas lease stipulations will be applied within this Management Area by landtype as stated in the Landtype Guidelines (Appendix Q). Special stipulations may be necessary for certain activities because of the management goals for this area (refer to AFFECTED ENVIRONMENT, EVALUATION CRITERIA in Appendix O).

Soils
16A

1. Detailed soil map, evaluation, and recommended protection measures will be required for project design.

Facilities
16 thru 16C

1. Roads will generally not be constructed for surface land management activities except for temporary minimum support facilities for aerial harvest systems.

Prescribed Fire
16 thru 16C

1. Follow Forest-wide standards for fire management and refer to Fire Management Direction in Appendix G.

2. Planned ignition prescribed fire may be utilized to reduce hazards from activity fuel concentrations and maintain or enhance vegetative components or wildlife habitat. Hazard reduction and site preparation broadcast burning units should be designed to reduce risk of escape and associated costs.

Management Areas 16-16C

Protection

Fire Suppression

16 through 16C

1. Follow Forest-wide standards for fire management and refer to Fire Management Direction in Appendix G.

2. The appropriate suppression response will be compatible with the resource goals of this Management Area. The contain and confine response options may be utilized on an economic basis only during pre- or post-season conditions.

3. District Ranger approval is required for heavy equipment use in any suppression action, and potential rehabilitation needs will be evaluated.

Lands

16 thru 16C

1. These lands are not excluded from or need not be avoided by utility corridors (see Corridor Planning, Appendix J).

Schedule of Management Practices (Average Annual Amount)

Management Practice	Units	Proposed Decade 1	Probable Decade 2
T&E Habitat Improvement	Acres	13.0	13.0
Clear Cut-Seed Cut	MMBF Acres	0.6 40.0	0.6 41.0
Shelterwood-Removal Cut	MMBF Acres	0.2 30.0	0.3 48.0
Total Timber Harvest*	MMBF	0.8	0.9
Fuels Management	Acres	70.0	89.0
Silviculture/Stand Exams	Acres	1.965.0	1,965.0
Reforestation	Acres	70.0	89.0

* The proposed 10-year timber sale offerings schedule is presented in Appendix M.

Monitoring and Evaluation Requirements

The monitoring requirements from Chapter V that are applicable to these Management Areas are: 1, 2, 4, 5, 8, 10, 13, 14, 16-25, 30, 31, 41, and 48-59. The procedure outlined in Chapter V will be followed to evaluate the data gathered during monitoring.

MANAGEMENT AREA 17

DESCRIPTION	Management Area 17 (10,705 acres) includes riparian areas consisting of aquatic, riparian, and a portion of terrestrial ecosystems along perennial stream reaches, and some important streams with typically a seasonal flow. They are generally too narrow in width to manage as separate units. Due to their limited size and width, management must be closely coordinated with management of the adjoining area. Management Area 17 stream reaches are shown on the management area map.* Riparian areas extend a variable distance from the bankfull edge (2 year flood height). Riparian management areas along streams vary as displayed in Figures III-1 and III-2, and as follows: 1) steep sideslopes (40% +) - average approximately 200 feet wide (generally 100 feet each side of stream), 2) moderate sideslopes (20-40%) - average 400 feet wide (generally 200 feet each side of stream), and 3) gentle sideslopes (0-20%) - average 600 feet wide (generally 300 feet each side of stream).
GOALS	Protect and maintain this riparian zone throughout the Forest, including fish and wildlife habitat, while maintaining a sustained yield of timber. Timber harvest will be used to maintain age class diversity of overstory vegetation and enhance riparian values. All riparian areas should be mapped and defined in permanent stand records during the first planning decade.
STANDARDS	In addition to the Forest-wide Management Direction included in Chapter II of this Plan, the following standards will apply to these Management Areas: A riparian area analysis will be made before a major project is implemented on the ground. This analysis may be done separately or as part of the project planning. This will be done on each riparian ecosystem to define its physical limits and current conditions and to specify the desired future conditions necessary to support any proposed management actions in this Management Area.

* Project analysis and mapping will determine the long term management area boundary for to each drainage.

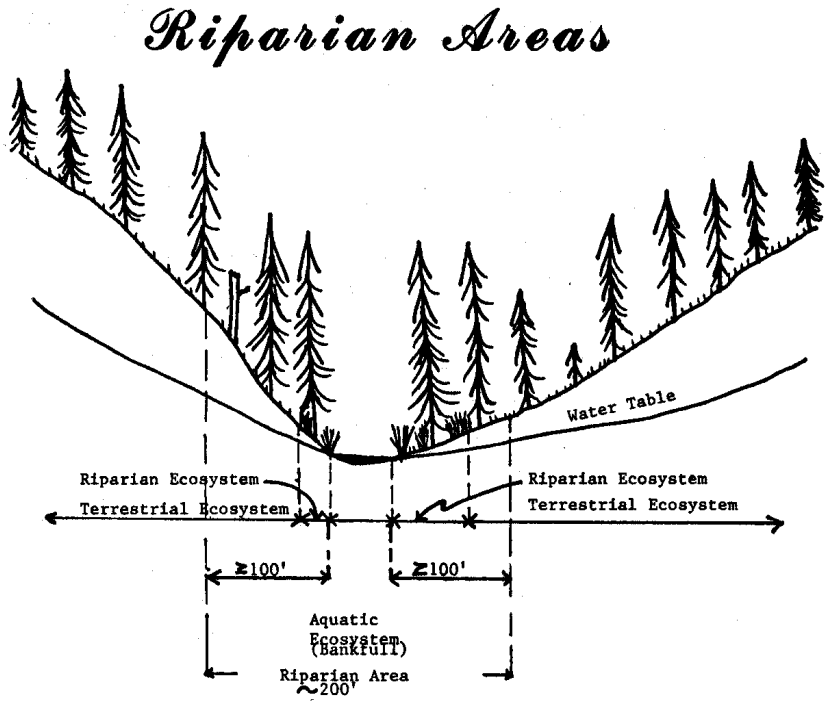

Figure III-1. Riparian area along a typical, small, high gradient, perennial stream with steep sideslopes.

Flathead National Forest

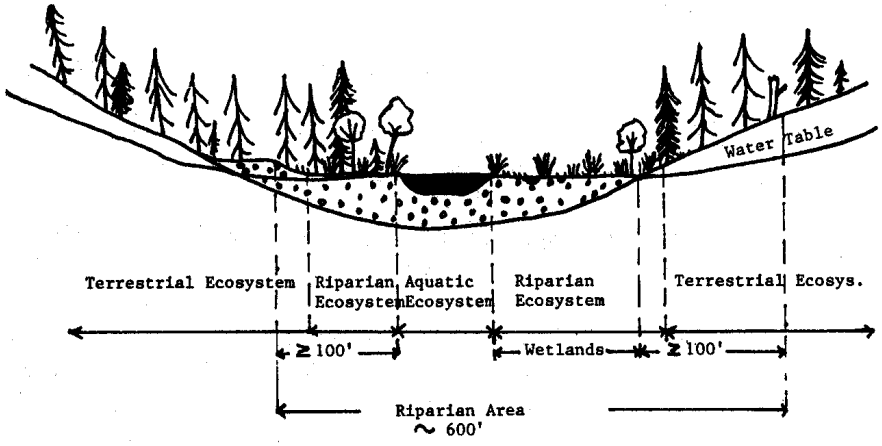

Figure III-2. Riparian area along a typical, large, low gradient, perennial stream with wide floodplain and gentle sideslopes.

Flathead National Forest

Management Area 17

Timber

1. Lands are classified as suitable for timber management, and timber harvest will be scheduled. Yields will be less than the biological timber potential due to long rotations.

2. Generally a 200-year rotation and 20-year cutting cycle will be maintained.

3. Commercial and noncommercial cutting of firewood is permitted so long as the minimum number of hard snags needed for wildlife is maintained.

4. Use even-aged and uneven-aged silvicultural management systems.

5. Give special consideration to the poorly drained soils of the Upper Griffin Creek Basin on the Tally Lake Ranger District in determining harvest and site preparation methods.

6. Timber harvest units will not adversely affect the aquatic environment and will generally be 2 acres or less within the riparian area. These units can be adjacent to harvest units outside the riparian zone. In the Upper Griffin Creek Basin, units will be no more than 10 acres in size and no more than 25 percent of the areas will be regenerated within any 20-year period.

7. Yarding or roadbuilding equipment generally will not be permitted within 100 feet of water courses or lake edge except at designated crossings.

8. Active sales will be inspected as often as needed to ensure protection of the riparian resource.

9. This Management Area will generally be managed to meet partial retention visual quality objectives. The overall VQO will be largely determined by the adjacent Management Area.

10. Timber stand improvement practices may be used to increase timber yields.

11. Artificial reforestation will be used to achieve desired species composition and stocking levels.

Management Area 17

12. To protect the riparian areas and water quality exercise caution when using yarding and roadbuilding equipment in the following Sediment Caution Zones:

a. within 700 feet of streams on 60% + slopes,
b. within 350 feet of streams on 40-60% slopes,
c. within 225 feet of streams on 20-40% slopes, and
d. within 300 feet of streams on 0-20% slopes.

(Also refer to Figure II-1 on page II-43.)

Timber (continued)

These Caution Zones may overlap between the riparian area and adjacent Management Areas.

Range

1. If a conflict occurs between riparian values and livestock use, it must be resolved in favor of the riparian values. This will require coordination with the permittee. If the conflict cannot be resolved, livestock numbers will be reduced or allotment closed. Range improvements may be constructed for resource protection and to mitigate major conflicts with adjacent private or public interest.

Wildlife and Fish

1. Adhere to the Forest-wide standards for grizzly bear management in occupied grizzly bear habitat.

2. Adequate old growth trees within 30 feet of streams will be maintained to provide recruitment to the fisheries streams to create pools for fish habitat.

3. Maintain adequate tree and shrub vegetation to contribute tree cover to banks and in stream areas in order to provide favorable water temperatures.

4. Maintain desirable levels of instream large woody debris to provide fish habitat.

5. Maintain the minimum streamflow necessary to sustain the biological community in MA 17 as well as the downstream biological communities.

Soil

1. Protect soil productivity.

2. Provide soil technical support (Inventory and Interpretation) for environmental assessments, project fires and implementation of landtype standards and guidelines.

Management Area 17

3. Soil surveys will be to an Order 3 level of detail.

Water

1. Maintain long-term water quality to meet or exceed State water quality standards. To ensure meeting these standards, surface-disturbing activities will be monitored where this need is identified.

2. Refer to the Forest-wide standards under Water and Soils for Best Management Practices, Landtype Guidelines, and standards applicable to projects or activities within this Management Area.

3. All project proposals will be analyzed and evaluated to determine the potential water quantity and quality impacts. Mitigation measures will be developed to minimize adverse effects.

Recreation

1. Generally trails will not be constructed in riparian areas except as needed to cross the area.

2. Off-road vehicle use, except by snowmobiles, is generally incompatible except on roads or trails.

3. Recreation opportunities will be provided. Management of other resources must be compatible with the riparian timber management objectives.

Visual Quality

1. The overall visual quality will be influenced by the adjacent Management Areas.

Minerals

1. Exploration and development activities allowed under the mining laws, Mining Act Use Regulations, and the Mineral Leasing Act will be in accordance with approved permits and plans of operation.

2. Oil and Gas lease stipulations will be applied within this Management Area by landtype as stated in the Landtype Guidelines (Appendix Q). Special stipulations may be necessary for certain activities because of the management goals for this area (refer to AFFECTED ENVIRONMENT, EVALUATION CRITERIA in Appendix O).

Management Area 17

Facilities

Roads

1. Where possible, stream channels will be dewatered during major bridge and culvert installations. Measures, such as coffer dams, settling basins and filters, will be designed and specified in contracts to reduce sediment introduction to streams by construction activities.

2. Active construction projects in riparian areas will receive full inspection during activities affecting water quality.

3. Roads will cross riparian areas with as little impact to the stream as is reasonable. Roads that parallel streams generally will not be built within riparian areas.

4. Stream crossings will be individually evaluated to ensure fish passage.

5. All stream crossings will be stabilized with riprap, vegetation, road surfacing, or other appropriate measures within 1 month after fill is completed to minimize sediment production. Installation of bridges and culverts within the riparian zone will be coordinated with the Montana Department of Fish, Wildlife and Parks and scheduled for periods when trout eggs and fry are not in the gravel.

6. Road closures will be implemented as necessary to be compatible with adjacent Management Area directions and/or to prevent resource or facility damage.

7. Special use applications will be considered individually and special stipulations attached for design and construction of any facilities. Generally, occupancy in the riparian area will not be permitted if there are reasonable alternatives.

Prescribed Fire

1. Follow Forest-wide standards for fire management and refer to Fire Management Direction in Appendix G.

2. Prescribed fire can be used to reduce hazards and provide site preparation when compatible with riparian objectives.

Management Area 17

Protection

Fire Suppression

1. Follow Forest-wide standards for fire management and refer to Fire Management Direction in Appendix G.

2. Wildfire originating in this area will be controlled. Line officer approval is required to implement suppression tactics that involve application of aerial retardant or mechanical soil displacement.

Insects and Disease

1. Pesticides will not be used in riparian areas.

Lands

1. These lands are not excluded from or need not be avoided by utility corridors (see Appendix J).

Schedule of Management Practices (Average Annual Amount)

Management Practice	Units	Proposed Decade 1	Probable Decade 2
Soil and Water Improvement	Acres	8.0	8.0
Clear Cut-Seed Cut	MMBF Acres	0.3 20.0	0.3 20.0
Selection	MMBF Acres	0.1 98.0	0.1 100.0
Salvage/Sanitation	MMBF Acres	0.7 480.0	0.6 400.0
Total Timber Harvest*	MMBF	1.1	1.0
Fuels Management	Acres	598.0	520.0
Silviculture/Stand Exams	Acres	1.000.0	1,000.0
Reforestation	Acres	20.0	20.0
Timber Stand Improvement	Acres	10.0	10.0
Road Construction	Miles	0.1	0.1

* The proposed 10-year timber sale offerings schedule is presented in Appendix M.

Monitoring and Evaluation Requirements

The monitoring requirements from Chapter V that are applicable to this Management Area are: 1, 2, 4, 5, 8, 10, 13-28, 31, 41, 45, and 47-57. The procedure outlined in Chapter V will be followed to evaluate the data gathered during monitoring.

MANAGEMENT AREA 18

[Note: General River Use Direction in Unbound Appendix BB superceded by Amendment 1]

DESCRIPTION

Management Area 18 (13,838 acres) consists of National Forest System lands designated for wild, scenic, and recreation river management under the Wild and Scenic Rivers Act.

GOALS

Manage each segment of the Flathead Wild and Scenic River Unit in a manner consistent with the classification assigned to it by Public Law 94-486, the designating Act. Maintain the scenic, ecological, and recreation integrity of the resource through responsible management. Emphasize visitor contact and education. Monitoring of use to determine thresholds of adverse impacts and management of use levels within desired social and biological settings based on sound, planned research. Protect private land rights within the designated corridor.

STANDARDS

In addition to the Forest-wide Management Direction included in Chapter II of this Plan, the following standards will apply to this Management Area:

All Resource Elements

1. The following is a summary of the management direction for the Wild and Scenic River system on the Flathead National Forest. For more detailed management directions, refer to Appendix BB. See also the standards for Management Area 21 for management of "Wild River" segments in the Bob Marshall and Great Bear Wildernesses.

Water

1. Maintain long-term water quality to meet or exceed State water quality standards. To ensure meeting these standards, surface-disturbing activities will be monitored where this need is identified.

2. Refer to the Forest-wide standards under Water and Soils for Best Management Practices, Landtype Guidelines, and standards applicable to projects or activities within this Management Area.

3. All project proposals will be analyzed and evaluated to determine the potential water quantity and quality impacts. Mitigation measures will be developed to minimize adverse effects.

Management Area 18

Wilderness

Wild River Segment	1. Manage for a Primitive Recreation Opportunity.
	2. Manage numbers of float outfitter permits and outfitter use at current levels until further data indicates these levels should be modified.
Recreation and Scenic River Segments Adjacent to Glacier National Park	1. Maintain commercial rafting services at or below present levels until further data indicates these levels should be modified without detriment to the recreation experience quality.
	2. Retain the river islands in their natural condition except for very limited facilities necessary to protect resources.

Visitor Management

Wild River Segment	1. Conduct river studies to further refine carrying capacity and to assess user preferences and needs.
	2. Emphasize low impact use of the river through visitor education programs.
Recreation River Segment	1. Provide and develop selected suitable sites to offer general public access to the river and corridor area for all compatible recreation uses.
	2. Support research efforts to determine river floater recreation carrying capacities.
	3. Manage for a RNA (Roaded Natural-Appearing) recreation opportunity.
	4. Continue the present number of outfitter floating visitor use allocations until further analysis supports the need for change.
Scenic River Segment	1. Manage for a SPM (semiprimitive motorized) recreation opportunity.
	2. Favor wildlife over recreation development where conflicts occur.

Management Area 18

3. Defer action on requests for increased number of outfitter floating requests until further analysis supports the need for such use and still maintains the values for which the river is managed.

Forest Cover

Wild River Segment

1. Exclude timber cutting except as needed in associating with primitive recreation experiences; i.e., trail maintenance, trail constructions, etc.

Recreation River Segment

1. Design approved vegetative manipulations to protect the values for which the river was classified.

Scenic River Segment

1. Manage the vegetative cover in this segment for visual quality, wildlife protection, and water quality.

Minerals

Wild River Segment

1. These segments are withdrawn by Congress from all forms of mineral entry or leasing.

Scenic & Recreation Segments

1. These segments were not withdrawn by Congress, but the Bureau of Land Management has made the decision to withhold leasing in these areas. Leases, if issued, should have a No Surface Occupancy stipulation.

2. Exploration and development activities allowed under the mining laws, Mining Act Use Regulations, and the Mineral Leasing Act will be in accordance with approved permits and plans of operation.

3. Oil and Gas lease stipulations will be applied within this Management Area by landtype as stated in the Landtype Guidelines (Appendix Q). Special stipulations may be necessary for certain activities because of the management goals for this area (refer to AFFECTED ENVIRONMENT, EVALUATION CRITERIA in Appendix O).

Visual Quality

1. Flathead National Forest lands within the Wild River Corridor segments in wilderness and outside of wilderness areas have a VQO (Visual Quality Objective) of Preservation.

2. Flathead National Forest lands within the Scenic segment have a VQO of Retention and the Recreation segments have a VQO of Partial Retention.

Management Area 18

3. Private lands under scenic easements seen from the river have a recommended VQO of Retention. Unseen lands from the river have a recommended VQO of Partial Retention. Final VQO will be determined by the terms of the easements.

Range

Wild River Segment

1. Wildlife has priority over recreation pack stock for forage needs.

2. Deny requests for stock grazing, other than recreation pack stock.

Recreation River Segment

1. Monitor existing use to insure that it remains compatible with river and other resource values.

Scenic River Segment

1. Favor wildlife, recreation, and water quality where conflicts occur between grazing and the other resources.

Fish and Wildlife

1. Standards for fish and wildlife management for all segments of the river are found in FSM 2611.1--1, R-1, Supplement 45.

2. Adhere to the Forest-wide standards for grizzly bear management in occupied grizzly bear habitat.

Lands

Wild River Segment

1. Continue public ownership.

Recreation River Segment

1. Continue scenic easement and fee acquisition on a priority basis.

2. Work closely with landowners to provide for adequate levels of easement administration and inspection.

3. Modify items currently under permit that do not blend or fit in with the natural environment, or terminate upon expiration of their current time period.

Scenic River Segment

1. Proceed with scenic easement and fee acquisition on a priority basis.

Wildfire

Wild & Scenic River Segments

1. Refer to the Phase II, Great Bear-Bob Marshall, 1983, and the Scapegoat-Danaher Fire Management Plan for specific directions for inside the wildernesses.

Management Area 18

	2. Meet fire suppression objectives with methods that least alter the natural setting outside the wilderness.
Recreation River Segment	1. Meet fire suppression objectives with methods that least alter the natural setting in the river corridor.
<u>Insect and Disease</u>	
Wild River Segment	1. Exclude harvest of infested or diseased trees from the river corridor.
	2. Take control measures as necessary outside the wilderness that are consistent with Wild River values.
Recreation River Segment	1. Management actions can be taken to control epidemic outbreaks of insect and diseases. Harvest will be done in a manner that protects the river values.
Scenic River Segment	1. Salvage/sanitation harvest can be accomplished to protect the river resource values.
	2. No roads will be constructed that cannot be returned to their natural condition.
<u>Transportation</u>	
Wild River Segment	1. No roads are permitted in this segment of the river corridor.
Recreation & Scenic River Segments	1. Design roads and other projects on National Forest System lands to standards that protect or enhance the river values.
	2. Manage road construction on private lands under terms of their scenic easements.
<u>Motorized Use</u>	
Wild River Segment	1. Prohibit public use of motorized equipment in the river corridor.
	2. Permit administrative use of motorized equipment in emergency situations; i.e., fire, and search and rescue.
Recreation & Scenic River Segments	1. Prohibit use of boats driven by motors exceeding 10 horsepower. Administrative use of motors exceeding 10 horsepower may be authorized for emergency purposes. Permission to exceed 10 horsepower limitations will be granted only for the following reasons:

Management Area 18

a. Identified vessels of recognized search and rescue organizations or agency actively involved in search or rescue activities for suspected injured or drowning victims. Permission will not be granted for search for lost or damaged vessels, or equipment.

b. Identified vessels of recognized search and rescue organizations or agency (FS, NPS, State) actively involved in training runs, or agency administrative or research activities not possible via craft propelled by a 10 horsepower or less motor.

c. All excepted vessels will be clearly identified while on the river. No recreational equipment will be carried on board during these trips.

Signing

All Segments

1. Sign boundary segments (refer to unbound Appendix BB), access sites, and points at which floaters are entering and leaving shoreline of National Forest System lands.

2. Manage signing on private lands within the river corridor under terms of their scenic easements.

Communications

All Segments

1. Continue to maintain existing communication systems.

Structures and Improvements

Wild River Segment

1. Screen administrative facilities from view of the river or blend them into the natural river setting.

2. Do not permit additional outfitter base camps in the river corridor. Modify, blend, or relocate existing base camps so that they blend into the natural river environment.

Recreation and Scenic River Segments

1. Screen or blend administrative facilities into the natural river setting.

2. Protect river values through purchase of scenic easements. Allow additional developments provided they fit into the natural river setting.

Management Area 18

Research

All Segments	1. Permit research studies that are compatible with the river values and will provide a benefit for river management.

Cooperation & Visitor Information Services

All Segments	1. Continue cooperation with the Flathead County Sheriff and other agencies, as appropriate, in search and rescue missions.
	2. Develop an effective visitor education program, as appropriate, for each of the river segments or Management Areas.

Schedule of Management Practices (Average Annual Amount)

No management practices are scheduled.

Monitoring and Evaluation Requirements

The monitoring requirements from Chapter V that are applicable to this Management Area are: 1, 2, 4, 5, 8, 10, 13, 14, 16-25, 38-41, and 48-59. The procedure outlined in Chapter V will be followed to evaluate the data gathered during monitoring.

MANAGEMENT AREA 19

DESCRIPTION	Management Area 19, Jewel Basin Hiking Area (15,368 acres*), consists of land designated under CFR 294. It is on the Swan Lake and Hungry Horse Ranger Districts and is administered by the Hungry Horse District Ranger. Jewel Basin offers a recreation experience level typified by a substantially natural forest environment where outside influences are present, but minimized. Access to the area can be challenging for a hiker but does not necessarily require arduous physical exertion. The opportunity for natural sounds and scenes are present, but less than that found in wilderness. All of Jewel Basin, plus a surrounding 16,000 acres, is being recommended for wilderness designation. Until Congress has made a decision on classification of this area, the wilderness values will be protected and managed in accordance with MA 19 goals and standards. If classified, a new wilderness policy will be developed for the area.
GOALS	Manage this area for hiking activities. Realize full benefit from the unique and outstanding characteristics of the area. Provide opportunities for a recreation experience level between that found in wilderness and areas accessible by roads, but not satisfied in either. Manage the area for semiprimitive nonmotorized recreation opportunities. Satisfy the psychological needs of individuals seeking a rewarding and meaningful recreation experience in a near primitive forest environment. Manage to provide a balance between the needs of people and the desired social, physical, and biological setting. Maintain the area in its roadless state. In areas recommended for wilderness, maintain all wilderness values until Congress reaches a decision on wilderness additions. Total proposed wilderness within this Management Area is 15,368 acres.

* Includes proposed wilderness acres.

Management Area 19

STANDARDS

In addition to the Forest-wide Management Direction included in Chapter II of this Plan, the following standards will apply in this Management Area:

Visitor Use Management

1. Management action for limiting and/or distributing visitor use in this area will be based on application of the Limits of Acceptable Change (LAC) process described by Stankey, et al, in The Limits of Acceptable Change (LAC) System for Wilderness Planning, Intermountain Forest and Range Experiment Station, USDA - Forest Service, General Technical Report INT-176, January 1985. The LAC system provides a framework for determining the range of social and resource conditions acceptable in wilderness settings in order to ensure a diversity of high quality wilderness recreation opportunities is provided. It focuses on limiting change to resources that, if overused, would degrade the wilderness experience, and defines opportunities for various levels of contact with the natural scene. The concept recognizes that an area's ability to accommodate use depends on several variables, including the intensity of management, visitor behavior, timing or season of use, and elevation and habitat of the specific sites involved. Upon public review and Forest Service approval, management actions will be incorporated into the Forest Plan as an amendment.

2. Complete the LAC process by December 31, 1989.

3. Management and development will favor visits of short duration.

Recreation

1. Installations which will facilitate public use such as simple fireplaces, toilets, and trails and other improvements for visitor use will be provided as necessary for the protection and management of the near primitive forest environment.

2. Locate public campsites at a sufficient distance from lakes, streams, trails, or other natural attractions to allow appropriate use without unacceptable depreciation of the focal point of public interest.

3. Identify and protect historic, scenic, geological, and similar sites or areas.

Management Area 19

4. Continue the "pack it in--pack it out" policy for all unburnable garbage.

5. Pit toilets may be used providing their installation meets the following requirements:
   a. Will not pollute adjacent waters.
   b. Located at least 100 feet from open water.
   c. Are constructed with approved design plans.

6. The following uses are not conforming and will not be permitted in the area by the public:
   a. Packstock (e.g. horses, llamas, mules).
   b. Motorized vehicles (e.g. trail bikes, snowmobiles).
   c. Motorized equipment (e.g. generators, outboard motors, chainsaws).
   d. Mechanized trail vehicles (e.g. mountain bicycles).
   e. Helicopter landings.

Exceptions will be made for nonmotorized wheelchairs.

The Forest Supervisor may authorize use of motorized equipment or livestock as deemed necessary for the administration of the area and its resources.

7. Packstock approved for administrative use will not remain within the hiking area overnight.

8. Deteriorated campsites will be rehabilitated or allowed to recover by closing them to public use.

9. The Regional Forester will promulgate special rules and regulations to meet safety requirements.

Wilderness

1. No action can occur in recommended wildernesses that will reduce the areas' wilderness attributes until Congress has made a decision on wilderness classification or otherwise specified how these areas will be managed.

Timber

1. Lands are classified as unsuitable for timber management, and timber harvest will not be scheduled.

2. Necessary insect and disease control measures shall minimize adverse effect on recreation values.

Forage

1. Forage will be maintained in its natural state primarily for wildlife use.

Management Area 19

2. Seeding or transplanting of native plants (or plants that are established in the area) may be done where soil is eroding.

Wildlife

1. Adhere to the Forest-wide standards for grizzly bear management in occupied grizzly bear habitat.

2. Goat habitat will be protected.

Fisheries

1. Work with the Montana Fish and Game to coordinate habitat improvement programs to maintain fisheries.

2. Species of trout most adaptable to the habitat will be maintained in lakes.

Water

1. Vegetative cover will not be manipulated to increase water yield.

2. Maintain long-term water quality to meet or exceed State water quality standards. To ensure meeting these standards, surface-disturbing activities will be monitored where this need is identified.

3. Refer to the Forest-wide standards under Water and Soils for Best Management Practices, Landtype Guidelines, and standards applicable to projects or activities within this Management Area.

4. All project proposals will be analyzed and evaluated to determine the potential water quantity and quality impacts. Mitigation measures will be developed to minimize adverse effects.

Soils

1. Trail improvement, trail construction, and campsite development will be implemented with emphasis to soil stabilization.

Land Occupancy

1. Structures and uses will be planned and coordinated to cause the least disturbance to recreation values.

2. Limitations on visitor numbers should be a last-resort management effort when other management measures cannot maintain quality resource values.

3. Outfitter special use permits will not be issued.

Management Area 19

4. This Management Area is an avoidance area for utility corridors (see Appendix J).

Fire Control

1. At present, there is not an obvious need for prescribed fire, however, it may be used as a management tool providing the recreation resource is given primary consideration.

2. Use fire suppression measures and techniques which achieve fire control objectives with the minimum adverse impact on recreation values. Give preference to methods and equipment which least alter the landscape or disturb the land surface.

3. A pre-attack fire plan will be prepared for the area.

Transportation

1. Transportation planning will be directed to meet the recreation needs of the area.

2. Coordinate access to the area with the carrying capacity of the hiking area.

3. Trails shall be located and constructed to minimize the alteration of the landscape and reduction of scenic value.

4. Alpine meadows, lakes, and goat range presently without trails shall be studied and the value with and without a trail system analyzed before deciding upon construction of trails.

5. Helicopters may be used for administrative purposes. This includes use by the Montana Fish and Game, service trips to the television repeater site and Forest Service administrative use. Flights will be planned and coordinated with the Forest Supervisor to effect the least disturbance to recreation visitors.

6. The special-use road to the television microwave repeater sites will not be maintained for public use.

Signing

1. Ranger Districts will jointly prepare a coordinated sign plan.

2. Where feasible, regultory signs will be posted outside the area.

Management Area 19

3. Signing will be confined to the minimum necessary to give directions and meet interpretive needs.

Information and Education

1. A brochure will cover interpretive features, forest manners, and recreational opportunities.

Minerals

1. The surface management philosophy for Jewel Basin is similar to that of wilderness from the standpoint of mineral development. Surface occupancy is not acceptable. The outer portions of Jewel Basin have been leased with No Surface Occupancy stipulations. These areas may be accessible from drill sites outside of Jewel Basin through directional drilling. The inner core of Jewel Basin, with no current technology available for accessing via directional drilling, will not be leased. Upon approval of the Forest Plan, a formal mineral withdrawal, which prohibits surface occupancy for any mineral activity, will be prepared.

Schedule of Management Practices (Average Annual Amount)

Management Practice	Units	Proposed Decade 1	Probable Decade 2
Trail Construction/ Reconstruction	Miles	0.1	0.1

Monitoring and Evaluation Requirements

The monitoring requirements from Chapter V that are applicable to this Management Area are: 1, 2, 4, 5, 8, 10, 13, 14, 16-25, 48-54, 57, 58, and 59. The procedure outlined in Chapter V will be followed to evaluate the data gathered during monitoring.

MANAGEMENT AREA 20

DESCRIPTION	Management Area 20 includes Big Mountain Winter Sports Area (3,574 acres). Currently, about 3,036 acres are managed under special-use permit as a winter sports area. The remainder of this Management Area provides opportunities for Big Mountain expansion. The Big Mountain complex is only partially located on National Forest System lands. These lands are on the Tally Lake Ranger District and the Glacier View Ranger District. Tally Lake Ranger District manages the area.
GOALS	Continue management as a winter sports area under a Big Mountain Resort Area Master Plan as approved by the Forest Supervisor.
STANDARDS	In addition to the Forest-wide Management Direction included in Chapter II of this Plan, the following standards will apply to this Management Area:
All Resource Elements	1. Management direction for all resources is provided by the approved portion of the Big Mountain Resort Area Master Plan as described in the decision notice (see Appendix NN).
Water	1. Maintain long-term water quality to meet or exceed State water quality standards. To ensure meeting these standards, surface-disturbing activities will be monitored where this need is identified. 2. All project proposals will be analyzed and evaluated to determine the potential water quantity and quality impacts. Mitigation measures will be developed to minimize adverse effects.
Visual Quality	1. The visual quality objective is modification.
Wildlife and Fish	1. Adhere to the Forest-wide standards for grizzly bear management in occupied grizzly bear habitat.
Timber	1. Lands are classified as unsuitable for timber management, and timber harvest will not be scheduled.

Management Area 20

Minerals	1. Exploration and development activities allowed under the mining laws, Mining Act Use Regulations, and the Mineral Leasing Act will be in accordance with approved permits and plans of operation. 2. Oil and Gas lease stipulations will be applied within this Management Area by landtype as stated in the Landtype Guidelines (Appendix Q). Special stipulations may be necessary for certain activities because of the management goals for this area (refer to AFFECTED ENVIRONMENT, EVALUATION CRITERIA in Appendix O).
Lands	1. This Management Area is an avoidance area for utility corridors (see Appendix J).

Schedule of Management Practices (Average Annual Amount)

No management practices are scheduled.

Monitoring and Evaluation Requirements

The monitoring requirements from Chapter V that are applicable to this Management Area are: 1, 2, 4, and 48-59. The procedure outlined in Chapter V will be followed to evaluate the data gathered during monitoring.

MANAGEMENT AREA 21

DESCRIPTION	Management Area 2l (996,381 acres) consists of the Great Bear Wilderness, designated in l978 by the U.S. Congress, and the Flathead National Forest portion of the Bob Marshall Wilderness. The Bob Marshall Wilderness was classified in l964 by the U.S. Congress. The Flathead National Forest, Spotted Bear Ranger District, manages about 70 percent of the Bob Marshall Wilderness. Management of the remaining 30 percent is provided by the Lewis and Clark National Forest. Hungry Horse Ranger District and Spotted Bear Ranger District share management responsibility for the Great Bear Wilderness.
GOALS	Manage these areas in accordance with the Wilderness Act of 1964 to maintain an enduring system of high quality wilderness representative of National Forest ecotypes. Perpetuate the wilderness resource for future generations and, in response to this goal, the visual quality objective is preservation. To the extent that it is consistent with the first two goals, provide opportunities for public use, enjoyment, and understanding of wilderness and the unique experiences dependent upon a wilderness setting. Maintain plants and animals indigenous to the area by protecting the natural dynamic equilibrium associated with natural, complete ecosystems. Accommodate and administer those "nonconforming but accepted" uses provided in the Wilderness Act and subsequent acts in a way to minimize their impacts. Consider the special protection needs of endangered plant and animal species and their habitats.
STANDARDS	Management standards for resources in the Bob Marshall/Great Bear/ Scapegoat Wilderness Complex were jointly prepared by the Lolo, Lewis and Clark, Helena, and Flathead National Forests for common, integrated administration of these three adjoining wildernesses.

Management Area 21

In addition to the Forest-wide Management Direction included in Chapter II of this Plan, the following standards will apply to this Management Area:

Visitor Use Management

1. Management action for limiting and/or distributing visitor use in these wildernesses will be based on application of the Limits of Acceptable Change (LAC) process described by Stankey, et al, in The Limits of Acceptable Change (LAC) System for Wilderness Planning, Intermountain Forest and Range Experiment Station, USDA - Forest Service, General Technical Report INT-176, January 1985. The LAC system provides a framework for determining the range of social and resource conditions acceptable in wilderness settings in order to ensure that a diversity of high quality wilderness recreation opportunities is provided. It focuses on limiting change to resources that, if overused, would degrade the wilderness experience, and defines opportunities for various levels of contact with the natural scene. The concept recognizes that an area's ability to accommodate use depends on several variables, including the intensity of management, visitor behavior, timing or season of use, and elevation and habitat of the specific sites involved. The lands within these wildernesses will be assigned to one of the four wilderness recreation opportunity classes described in Appendix R. The management emphasis for each opportunity class is stated in the Managerial Setting portion of the description. The emphasis will be on Opportunity Classes I and II except around heavily used trail corridors. Upon completion of public review and Regional Forester approval, additional direction for limitation and distribution of use will be incorporated into the Forest Plan, in accordance with the amendment provisions of 36 CFR 219.10 (a).

2. The current limits on party size (15), head of livestock per party (35), and length of stay (14 days) will remain in effect. Exceptions must be approved in writing by the local District Ranger.

3. Managers of the Scapegoat, Great Bear, and Bob Marshall Wildernesses will meet at least annually to discuss priorities for the use of wilderness rangers at overused areas and trailheads that are takeoff points to them. Managers will establish coordinated guidelines for the training of wilderness rangers and schedule training on a regular basis to ensure continuity of personnel

Management Area 21

adequately trained and current in state-of-the-art wilderness management techniques.

4. As encountered, remove or obliterate improvised camp structures, tent poles, fire rings, and other camp location indicators.

5. Establish a situation reporting network to keep administrative units updated on use, site conditions, trail conditions, and other helpful information that would support indirect, voluntary methods of visitor management. These reports will be made as needed. Information will not be provided to mass media, but used to respond to specific inquiries.

6. Managers may consider party size and duration of stay limits more restrictive than those currently in effect at sites where the limits of acceptable change are being approached or have been reached or exceeded. Inform outfitters and the public at least 30 days prior to implementing changes. In cases where site impacts exceed acceptable levels for the assigned wilderness opportunity class (Appendix R), immediate closure will be considered. Outfitters will be given 1 year's advance notice of changes which significantly affect their operations when an emergency does not exist. Notices will convey clearly the intent and purpose of changes from the current limits.

7. Visitor education and information programs will emphasize visitor contacts at portals and prior to the visitor reaching the wildernesses. Programs will be designed to allow about 60-80 percent of the users to read or hear the wilderness message prior to entering the area.

8. Encourage visitors to adopt a Low Impact Camping ethic:

- Use self-contained stoves.
- Remove fire circles and scatter remaining charcoal.
- Refrain from cutting green trees or limbs.
- Practice a Pack-in Pack-out policy.
- Use biodegradable soap and dispose of human waste and waste water from cooking and washing at least 100 feet from streams and lakes.

Management Area 21

9. A public notice will be placed on the major portal bulletin boards requesting visitors' cooperation in refraining from disturbing archeological resources.

10. Prior to completion of the LAC process, the following interim standards will be followed:

a. The primary objective of wilderness managers will be to minimize the amount of regulations and control present in wilderness. In conjunction with this objective, managers and wilderness rangers must work toward the preservation and restoration of the wilderness resource. (See FSM 2320.1 for a discussion and definition of wilderness and wilderness management objectives.) Managers will try indirect, voluntary methods as a first choice, monitor effects, and proceed to more direct enforcement strategies as needs dictate.

b. Managers will concentrate on improving conditions at campsites with unacceptable impacts such as the following:

1) 50 percent or more of the available ground cover reduced or removed in the immediate area,
2) absence of seedlings and saplings,
3) tree roots exposed; tree boles defaced,
4) abundance of nonnative plant species,
5) lack of fuelwood,
6) rock fire rings,
7) trails radiating from the site to latrine locations, and creeks.

c. The following methods will be used for managing campsites with unacceptable impacts. The methods used at specific sites and areas will be developed according to the LAC process.

1) Public information (public service media messages, portal notices, personal contact geared to informing the public what to look for in a campsite and the characteristics of sites they want to avoid. Emphasize low impact camping.
2) Physical site alteration. Make unacceptably impacted sites less appealing/less accessible. Remove fire rings and other evidence of man's presence.

Management Area 21

3) Post a site restoration message at portals and a sign at the overused site. Suggest alternative camping locations (by characteristic, not specific location) on the portal notice.
4) For specific sites, set limits on party size, length of stay, and equipment requirements (e.g., stoves rather than campfires). Requires that the public be informed of areas to which limitations and requirements apply; requires follow-up administration to check for compliance.
5) Initiate a self-issuing permit system. Post a destination signup sheet at portals to help managers and wilderness visitors alike to learn where other visitors intend to camp. This method must be accompanied by public information efforts to work effectively.
6) Site specific closures involve informing the public, posting notices on portals and at administrative sites, and signing sites as closed to all camping until further notice. This method also requires administrative follow-up.
7) A mandatory issued permit system requires users to check in at an administrative site and obtain a camping permit. Administrative units need to coordinate and communicate numbers of persons permitted at specific problem sites. Administrative follow-up is required.

Wildfire

1. Refer to the Wilderness Fire Plan, Phase II, Great Bear-Bob Marshall, 1983 (Appendix LL), and the Scapegoat-Danaher Fire Management Plan for specific direction.

Insects/Disease

1. No control measures will be considered without an appropriate environmental analysis. If control of insects and disease is necessary, it shall be carried out by measures which have the least adverse impact on the wilderness resource.

Wildlife and Fish

1. Fish and wildlife management in the complex will be consistent with Policies and Guidelines for Fish and Wildlife Management in Wildernesses and Primitive Areas adopted by the Forest Service, Bureau of Land Management, and the International Association of Fish and Wildlife Agencies.

Management Area 21

2. Managers will consult annually with personnel from the Montana Department of Fish, Wildlife and Parks relative to levels of harvest appropriate for maintaining native hunted and trapped species as part of the wilderness resource.

3. Natural processes such as fire, wind, and insect and disease activity will be the only agents permitted to influence vegetation and its associated wildlife in the wildernesss. No new exclosure structures will be installed.

4. The conservation of threatened and endangered species and their habitats will receive high priority in management of the wilderness resource.

5. The grizzly bear will continue to be a part of the wilderness experience. The public will be kept informed of known grizzly problem areas, but use will generally not be restricted from these areas. Education of bear avoidance techniques will be emphasized. Forest Supervisors will direct the development of more detailed standards necessary to protect both the bear and wilderness visitors. These standards will be consistent with Forest-wide standards for grizzly bear management in occupied grizzly bear habitat, and will be incorporated into the Forest Plan through amendment.

Cave Management

1. Caves will be managed as an element of the wilderness resource with the objective of allowing them to remain untrammeled without significant development or advertisement. Retain the opportunity for the public to experience cave discovery and challenge. Wilderness caves shall not be signed, nor will they be marked on maps or discussed in brochures.

2. The interior portions of caves in wilderness are subject to the same management guidelines that apply to all other portions of wilderness. Permanent reference markings within caves are not permitted.

Flagging may be used if promptly removed after it has served its purpose. Permanent or semipermanent installations and facilities are not permitted. All camping and exploration equipment will be packed out at the end of each trip unless excepted in writing by the District Ranger. Permanent caches will not be permitted.

Management Area 21

3. The appropriate wilderness manager will establish contact with local caving clubs. Prior to any group's commencing exploration activity, a memorandum of understanding/volunteer agreement will be prepared addressing the items discussed above and the following: schedules; party sizes; campsites; length of stay; exploration methods; removal of equipment; and campsite cleanup. Groups will be encouraged to avoid publicizing/promoting cave locations and attractions.

4. Caving is considered a high risk activity. In keeping with wilderness management philosophy, no specific actions will be taken to reduce the hazards encountered in cave exploration.

Lake Management

1. Minimize the evidence of man's activities around the lakes and return those showing signs of overuse in a more pristine condition.

2. Managers and wilderness rangers will encourage visitors to practice low impact camping techniques. Efforts will include informing the public of State laws that prohibit contaminating lakes with fish entrails and other refuse.

3. The use of chemical agents such as soap, detergents, and bleaches, whether biodegradable or not, will not be permitted in lakes.

4. Stock will not be tied, corralled, or picketed within 100 feet of a lake, spring, or stream.

Grazing

1. The Conference Report to S. 2009 (H.R. 96-1126) in the section under "Grazing in National Forest Wilderness Areas", FSM 2323.2, established guidelines and policy relative to domestic livestock grazing in wilderness. These guidelines and subsequent Forest Service Manual directives govern livestock management in wilderness.

This direction includes:

Management Area 21

a. Grazing in wilderness will be controlled under general regulations governing grazing. Any adjustments in the number of livestock permitted to graze in wilderness should be made as a result of land management plans or revision in grazing plans given consideration to legal mandate, range conditions, and the protection of the range resource from deterioration.
b. The maintenance of supporting facilities existing in an area prior to wilderness classification is permissible.
c. The replacement or reconstruction of deteriorated facilities should not require the use of "natural materials".
d. The construction of new improvements or replacement of deteriorated facilities is permissible if in accordance with appropriate plans.

2. All grazing areas within the wilderness will be designated as livestock grazing allotments. Objectives for the allotment management will be consistent with resource conditions in the assigned wilderness experience opportunity class (Appendix R). Managers will establish this process direction for:

a. spring and early summer grazing dates (generally not before July 1) based on range readiness checks;
b. determination of carrying capacity, condition, and trend;
c. monitoring of actual use levels.

3. Livestock grazing will be limited to areas capable and suitable for such use. The criteria for determining capability and suitability will be developed as part of an inventory of the forage resources in the wildernesses.

4. Permanent range structures, not authorized by permit, will be removed.

5. Managers will encourage horse and packstock users (including administrative, outfitter, and private parties) to plan for the fewest number of animals required for each trip. No more than 35 horses or mules will be permitted per party. Lower limits will be considered where warranted and considered necessary to protect the wilderness resource. As a guide, encourage the use of one pack animal for each two persons in a party. It is

Management Area 21

recognized that stock users may need two animals (one pack, one riding) per person during the hunting season.

6. Salt for livestock will be in block form and will be kept in leach-proof containers. Salt will be packed out of the wilderness at the end of each trip or at the end of the permitted use period.

7. Managers will inform wilderness users of the noxious weed problem and will use an Integrated Pest Management approach to prevent, control, or eradicate noxious weeds in the wilderness.

8. Before a decision is made to control noxious weeds with chemicals, an environmental document must be prepared discussing the need for control, risk to human health and the method to be used.

Transportation System & Signing

1. The management of the trail system including design standards, maintenance frequency and levels in the Complex will be in accordance with the direction developed through the LAC process.

2. In the interim, trail standards and trail maintenance priorities are described in Appendix D.

3. Managers will agree to appropriate maintenance schedules and standards for trails or segments of trails that cross administrative boundaries at coordination meetings. All administrative segments of such trails will be maintained to the appropriate standard during the same season.

4. Managers will establish design standards and maintenance criteria for all portals. As a minimum, portals will have a bulletin board featuring a map of the area, and pertinent visitor information.

5. Sign standards, mounts, and materials will be in accordance with standard R-1 specifications for Wilderness. Nonconforming signs will be phased out by attrition.

Signs will be posted and used only when maps and route descriptions cannot adequately serve the wilderness users.

Management Area 21

The following signs will be permitted: wilderness boundary signs, directional signs at trail junctions, and administrative signs. Trail signs will only contain the trail name. Destinations and/or mileage will not be included on trail signs within wilderness.

Cultural & Historic Resources

1. Cultural and historic resources will be considered a unique and nonrenewable part of the wilderness. Above-ground evidence of sites or structures will be subject to natural processes.

2. Scientific study of these resources is permissible within the intent and concept of wilderness.

3. Complete a cultural resource assessment on the evidence of man's activities and structures in the wilderness. Objectives of the assessment are to identify and nominate to the National Register of Historic Places those structures that qualify, and evaluate alternatives for handling those that do not.

Outfitter & Guide Operations

1. Administration of outfitter permits will be in accordance with Forest Service Manual 2721.53.

2. Prior to making a decision on the level of outfitter services, no additional outfitter and guide permits will be issued nor will approval be granted to expand operations beyond use levels authorized in 1978-1980 special use permits. The maximum use level for each outfitter is based on the highest annually permitted use during the years 1978-1980.

3. A decision will be made establishing the level of outfitter services following completion of the LAC process and/or additional environmental analysis. The decision will include at least the following criteria:

a. type and amount of services;
b. existing operations to determine how they meet identified needs;
c. existing operations to determine how they meet overall wilderness management objectives.

4. Increase on-the-ground administration and management of outfitter-guide permits.

Management Area 21

5. Encourage outfitters to develop and use minimum impact use techniques, and to educate their clientele to these techniques. Emphasize the role of these techniques and their use in protecting the wilderness resource and the continued recognition of outfitter operations as a means for many publics to enjoy this resource.

6. The Outfitter Special Use Permit will be the basis for determining conduct of outfitter and guide activities within the wilderness. Operations such as overnight use, day use, and drop camps shall be included.

7. Managers will develop camp standards for outfitter operations based on the Regional Forester's policy resulting from the 1980 R-1 National Forest Outfitters and Guides Task Force recommendations and the LAC process. The standards should delineate acceptable developments and the extent of development, including:

a. camp locations relative to trails, streams, lakes, and features;
b. permanent and temporary improvements authorized;
c. camp layout.

8. The use of spike camps will be evaluated during development or review of outfitter management direction. Spike camps which are not being utilized appropriately will be either reclassified accordingly, or use changed to abide by the terms of the permit.

9. Intensify efforts to eliminate or reduce unlicensed or unauthorized outfitter and guide use.

Administrative Facilities

1. Existing administrative structures and facilities will be retained for wilderness administrative purposes during this planning period.

2. Cultural assessments of facilities will be required before decisions concerning their future status are made.

3. No new facilities or major expansion of existing facilities (administrative sites, lookouts, fences) will be considered during this planning period.

Management Area 21

4. Radio repeaters, if necessary for wilderness administration, may be installed within wilderness only if locations outside the wilderness will not achieve communication needs,

Administrative Coordination

1. To achieve coordinated and consistent management of the Scapegoat, Great Bear, and Bob Marshall Wildernesses, retain the management coordination team composed of District Rangers from each administrative unit. The team will serve as a coordinating body, making recommendations to appropriate Forest Supervisors concerning program budget proposals, standards and guidelines, and the implementation and monitoring of management direction.

Minerals, Oil and Gas Leases

1. The 1964 Wilderness Act (P.L. 88-577) withdrew the Bob Marhsall, Scapegoat, and Great Bear Wildernesses from mining and mineral leasing laws effective midnight, December 31, 1983, except that, valid existing mining claims will be administered in accordance with appropriate mining laws.

2. Operating plans will minimize degradation of wilderness values.

Emergency

1. Motorized equipment and mechanical transport may be allowed when an emergency condition exists which involves the health and safety of human beings (FSM 2326.11).

2. Removal of bodies and seriously ill or injured persons will be considered an emergency justifying landing of an aircraft. For emergency helicopter landings, natural openings will be utilized where possible rather than cutting new openings.

3. Public communications from inside wilderness will be restricted to emergencies.

Water

1. Monitor water quality to meet or exceed State water quality standards.

Management Area 21

2. All project proposals will be analyzed and evaluated to determine the potential water quantity and quality impacts. Mitigation measures will be developed to minimize adverse effects. If the unacceptable effects can not be adequately mitigated, the project will be redesigned or abandoned.

Air Quality

1. Manage the airshed in the Bob Marshall and Scapegoat to meet Class I Air Quality Standard and Class II in the Great Bear and the Bob Marshall addition in the Lewis and Clark National Forest.

2. Where manageable or negotiable, identify and mitigate outside influences. The air quality related values will be identified when a PSD (Prevention of Significant Deterioration) action that may impact the wilderness is received.

Research

1. Research may be conducted in wilderness but must be done in accordance with the concept of wilderness and within the constraints of FSM 2320. Requests will be considered only if wilderness is essential to the results of the research, there being no suitable land areas elsewhere. Where possible, research projects should be directed outside wilderness where similar areas are available or where wilderness values would not be jeopardized in the conduct of research. Research projects will be reviewed by the management coordination team and approved by the Regional Forester (see FSM 2323.9).

Continental Divide Trail

1. A specific CDNST (Continental Divide National Scenic Trail) route will not be identified prior to approval of the comprehensive plan being prepared by the Department of Agriculture.

2. Individual inquiries about the trail will be handled on a case-by-case basis. Routes suggested may vary depending on the method of travel, proposed length of stay, season of travel, and degree of challenge desired.

3. One person per Forest will be designated as responsible for handling inquiries concerning the CDNST.

Management Area 21

Lands

Special Uses

1. These Management Areas are exclusion areas for utility corridors (see Appendix J).

2. The Lolo Forest Landownership Adjustment Program will establish the priority for acquiring the private land in the Scapegoat Wilderness.

Wild and Scenic River

1. Where segments of the Flathead Wild and Scenic River are located in the Wilderness Complex, the more stringent standards will prevail.

Schedule of Management Practices (Average Annual Amount)

Management Practice	Units	Proposed Decade 1	Probable Decade 2
Trail Construction/ Reconstruction	Miles	2.5	2.5

Monitoring and Evaluation Requirements

The monitoring requirements from Chapter V that are applicable to this Management Area are: 1, 2, 4, 7, 8, 10, 13, 14, 16-25, 48-50, 53, 54, and 57-59. The procedure outlined in Chapter V will be followed to evaluate the data gathered during monitoring.

MANAGEMENT AREA 22

DESCRIPTION

Management Area 22, the Mission Mountains Wilderness (73,573 acres), consists of classified wilderness designated in 1975 by the U.S. Congress. Primary management responsibility is held by the Swan Lake Ranger District.

GOALS

Manage this area in accordance with the Wilderness Act of 1964 to maintain an enduring system of high quality wilderness representative of all National Forest ecotypes.

Perpetuate the wilderness resource for future generations, and in response to this goal, the visual quality objective is preservation.

To the extent that it is consistent with the first two goals, provide opportunities for public use, enjoyment, and understanding of wilderness and the unique experiences dependent upon wilderness setting.

Maintain plants and animals indigenous to the area by protecting the natural dynamic equilibrium associated with natural, complete ecosystems.

Accommodate and administer those "nonconforming but accepted" uses provided in the Wilderness Act and subsequent acts in a way to minimize their impacts.

Consider the special protection needs of endangered plant and animal species and their habitats.

STANDARDS

In addition to the Forest-wide Management Direction included in Chapter II of this Plan, the following standards will apply to this Management Area:

<u>All Resource Elements</u>

1. Management action for limiting and/or distributing visitor use in this wilderness will be based on application of the Limits of Acceptable Change (LAC) process described by Stankey, et al., in The Limits of Acceptable Change (LAC) System for Wilderness Planning, Intermountain Forest and Range Experiment Station, USDA - Forest Service, General Technical Report INT-176, January 1985. The LAC system provides a framework for determining the range of social and resource conditions acceptable in wilderness settings in

Management Area 22

order to ensure a diversity of high quality wilderness recreation opportunities is provided. It focuses on limiting change to resources that, if overused, would degrade the wilderness experience, and defines opportunities for various levels of contact with the natural scene. The concept recognizes that an area's ability to accommodate use depends on several variables, including the intensity of management, visitor behavior, timing or season of use, and elevation and habitat of the specific sites involved. Upon public review and Forest Service approval, management actions will be incorporated into the Forest Plan as an amendment.

2. Complete the LAC process by December 31, 1987.

Transportation System

1. Generally new trails will not be constructed.

2. Relocate or reconstruct portions of heavily eroded trails as necessary to prevent soil erosion.

3. For large portions of the wilderness will remain trail-less, encourage off-trail travel. Do not identify on Forest Service maps trails that might develop as a result of this travel.

4. Evaluate the possibility of providing loop trips utilizing portions of old abandoned trails.

5. Permit nature to modify the 9 miles of existing high standard trails by allowing the brush to encroach on the tread and the grade to undulate.

6. Trail maintenance priorities are set in Appendix D. Appendix D also defines appropriate trail standards.

Use Areas

1. The boat landing at the upper end of Lindbergh Lake will not be improved.

2. Continue to monitor the closure and the rehabilitation of the overnight campsites at Glacier and Cold Lakes. As necessary, close additional overused campsites to allow for their recovery.

Signs

1. The management of the trail system including design standards, maintenance frequency and levels in this wilderness will be in accordance with the direction developed through the LAC process.

Management Area 22

2. Limit signs within the wilderness to directional signs at trail junctions and necessary temporary administrative signs. Trail signs will contain only trail name and number. Destinations will not be included. Natural features will not be signed.

3. Install boundary signs at selected locations where snowmobile use occurs to prevent trespass.

4. Install the standard Northern Region wilderness information board at all trailheads.

Cultural Resources

1. Cultural and historic resources will be considered a unique and nonrenewable part of the wilderness resource. Above-ground evidence of sites or structures will be subject to natural processes in the same manner as other wilderness resources.

2. No maintenance, rehabilitation, restoration, or interpretation will be provided.

3. Scientific study of these resources is permissible within the intent and concept of wilderness. Study of management will not normally include any excavation, restoration, perpetuation, or interpretation activites (see also FSM 2324.8).

4. Survey 1 percent of the area per year.

Visitor Use Management

1. Develop indirect, voluntary methods of visitor management, then monitor effects, and proceed to more direct enforcement strategies as needs dictate. Specific visitor management actions will be developed in the LAC process.

2. The basic policy governing visitor information and interpretive services within wilderness and about the wilderness resource should be to provide for user safety, educate users to basic concepts of ecology and care of ecosystems, identity and inform the public of the range of recreation opportunities surrounding area, and present patterns of use and preserve the primitive recreation experience (see FSM 2323.12b).

3. Continue with the current volunteer registration system to gather baseline data for establising limits of acceptable change and to facilitate public contact and education.

Management Area 22

4. Encourage visitors to adopt a Low Impact Camping ethic:
- Use self-contained stoves.
- Remove fire circles and scatter remaining charcoal.
- Refrain from cutting green trees or limbs.
- Practice a Pack-in Pack-out policy.
- Use biodegradable soap and dispose of human waste and waste water from cooking and washing at least 100 feet from streams and lakes.

5. Designate Glacier, Cold, and Upper Cold Lakes for day use only.

6. Encourage groups to limit their size of party to eight. Groups larger than eight should disperse at campsites.

Research

1. Research may be conducted in wilderness but must be done in accordance with the concept of wilderness and within the constraints of FSM 2320. Requests will be considered only if wilderness is essential to the results of the research. Where possible, research projects should be conducted outside wilderness where similar areas are available or where wilderness values would not be jeopardized in the conduct of research. Research projects will be reviewed by the management coordination team and approved by the Regional Forester (see FSM 2323.9).

Resource Protection

1. Concentrate on improving conditions at degraded sites. Standards for identifying degraded sites will be established through the LAC process. The following priorities are to be used in correcting problems at degraded sites pending completion of this process:
   a. Public information and education
   b. Physical site alteration
   c. Restoration of signs and messages
   d. Party size, length of stay, and equipment
   e. Limits for specific sites
   g. Mandatory permits
   h. Site closure

Coordination

1. Recognize and consider wilderness values in timber management practices adjacent to the boundary.

Management Area 22

2. To the extent possible, coordinate management of the Mission Mountains Wilderness with management of that portion of the Mission Mountains administered by the Confederated Salish and Kootenai Tribes as a tribal wilderness.

Fish and Wildlife

1. Adhere to the Forest-wide standards for grizzly bear management in occupied grizzly bear habitat. The conservation of threatened and endangered species and their habitats receive high priority in the management of the wilderness resource (see FSM 2670.3 and FSH 2323.3). Annual contact will be established and maintained with Border Grizzly Project personnel to assure continued and up-to-date knowledge of grizzly bear population dynamics. Similar contact will be established with members of the Wolf Ecology Project.

2. To the extent possible, wildlife species in wilderness should be allowed to maintain a natural balance with their habitat and each other. Wildlife may be harvested under State regulations. Fish management will be consistent with wilderness values (see FSM 2323.3).

3. Natural processes such as fire, wind, and insect and disease epidemics will be the only agents permitted to influence vegetation in the wilderness and its associated wildlife. No exclosure structures will be installed, and no vegetation manipulation projects will be considered.

Grazing

1. Provide hitchracks in the following areas for the indicated number of stock: Cedar Lake - 8 head, Piper Lake - 8 head, Mollman Lake - 16 head.

2. Provide information and work with horse users on how to use stock in harmony with the wilderness environment.

3. Encourage supplemental feed for recreation stock.

4. Monitor recreation stock grazing sites annually and impose restrictions as necessary.

Minerals

1. The 1964 Wilderness Act (P.L. 88-577) withdrew the Mission Mountains Wilderness from mining and mineral leasing laws effective midnight, December 31, 1983, except that valid existing mining claims will be administered in accordance with appropriate mining laws.

Management Area 22

2. Operating plans will minimize degradation of wilderness values.

Buildings and Facilities

1. No permanent structures for the administration of wilderness will be built.

2. Prior to construction of any facilities, an investigation of the disturbed area will be conducted to insure that endangered plant species will not be disturbed and/or destroyed.

Lands

1. This Management Area is an exclusion area for utility corridors (see Appendix J).

Wildfire

1. Naturally occurring fires will generally be allowed to fully play their natural role in ecosystems of the area. Natural fires will be monitored, and when they threaten life and/or property within the wilderness, or when unacceptable damage to life, resources, or property outside wilderness is imminent, appropriate suppression action will be taken.

2. The determination of fire's natural role in these ecosystems and predictions of fire behavior will be based on soil characteristics, fuels, cover types, natural barriers, erosion potential, weather patterns, and research into how fire has affected different ecosystems and how fire protection has influenced that role.

3. An environmental analysis for fire management units within the wilderness will define the role of fire within those units. A fire management prescription will be prepared for each management unit and will specify whether fire may or may not be allowed to burn, under what conditions it may burn, and any desired modifications of control principles and techniques. Fire management plans and prescriptions will be developed according to the criteria contained in FSM 5130.

4. Suppression decisions for man-caused fires escaping initial attack will reflect consideration for wilderness values, suppression costs, natural barriers, and anticipated fire behavior. Control methods and equipment that least alter the landscape or disturb the land surface will be used. Bulldozers or other heavy equipment that disturb soil will not be used to control fires (see FSM 2324.2 and FSH 5109.07, R-1 Supplement #2, May 1975).

Management Area 22

Law Enforcement	1. Within wildernesses, law enforcement controls will be achieved primarily through visitor education and information rather than direct enforcement action.
Emergency	1. Motorized equipment and mechanical transport may be allowed when an emergency condition exists which involves the health and safety of human beings (FSM 2326.11). 2. Removal of bodies and seriously ill or injured persons will be considered an emergency justifying landing of an aircraft. For emergency helicopter landings, natural openings will be utilized where possible rather than cutting new openings. 3. Public communications from inside wilderness will be restricted to emergencies.
Insect and Disease	1. Insects or disease outbreaks will not be artificially controlled, unless it is necessary to protect timber or other valuable vegetation outside the wilderness. Surveys to monitor Forest insect and disease in wilderness shall be made in the same manner as prescribed for other Forest lands (see also FSM 5222). A biological assessment of insect or disease outbreaks that have been detected shall be made as prescribed in FSM 2324.12 and FSM 3431. 2. When controls of insects or disease are necessary within wilderness, they shall be carried out by measures which have the least adverse impact on the wilderness resource. Procedures prescribed in FSM 2324.13 and FSM 5240 will be followed.
Lake Management	1. Minimize the evidence of man's activities around the lakes and return those showing signs of overuse in a more pristine condition. 2. Managers and wilderness rangers will encourage visitors to practice low impact camping techniques. Efforts will include informing the public of State laws that prohibit contaminating lakes with fish entrails and other refuse. 3. The use of chemical agents such as soap, detergents, and bleaches, whether biodegradable or not, will not be permitted in lakes.

Management Area 22

4. Stock will not be tied, corralled, or picketed within 100 feet of a lake, spring, or stream.

Outfitter and Guide Operations

1. An Outfitter Operation Camp Management standard shall be prepared for the outfitter operation at Mollman Lake.

2. Recognize the prerogative of outfitters to retrieve game within the wilderness on day-use basis.

3. Do not issue new special-use permits for outfitter operations until it is determined that additional or new services are needed.

4. Present permits may be transferred and/or reissued only to the current outfitter's son(s).

Air Quality

1. Manage the airshed in the Mission Mountains to meet Class I Air Quality Standards.

2. Where manageable or negotiable, identify and mitigate outside influences. The air quality related values will be identified when a PSD (Prevention of Significant Deterioration) action that may impact the wilderness is received.

Water

1. Monitor water quality to meet or exceed State water quality standards.

2. All project proposals will be analyzed and evaluated to determine the potential water quantity and quality impacts. Mitigation measures will be developed to minimize adverse effects. If the unacceptable effects cannot be adequately mitigated, the project will be redesigned or abandoned.

Schedule of Management Practices (Average Annual Amount)

No management practices are scheduled.

Monitoring and Evaluation Requirements

The monitoring requirements from Chapter V that are applicable to this Management Area are: 1, 2, 4, 7, 8, 10, 13, 14, 16-25, 48-50, 53, 54, and 57-59. The procedure outlined in Chapter V will be followed to evaluate the data gathered during monitoring.

TABLE III-1. Management Area Acreage - Flathead National Forest
(Table from original 1986 Forest Plan -- not adjusted for amendments)

Management Area	Suitable for Timber Production	Management Area Acreage: W/out Proposed Wilderness	With Proposed Wilderness	Total Acres
1	No	41,953	916	42,869
2	No	17.890	44,709	62,599
2A	No	91,858	15,345	107,203
2B	No	109,025	9,054	118,079
2C	No	8,934	0	8,934
2D	No	526	0	526
2E	No	184	0	184
2F	No	260	0	260
		228,677	69,108	297,785
3	No	39,862	395	40,257
3A	No	495	0	495
		40,357	395	40,752
4	No	314	0	314
5	Yes	3,753	0	3,753
7	Yes	42,861	0	42,861
7A	Yes	5,934	0	5,934
		48,795	0	48,795
8	Yes	7,551	0	7,551
9	Yes	18,812	0	18,812
9B	No	80	0	80
		18,892	0	18,892
10	No	1,268	0	1,268
10A	No	193	0	193
		1,461	0	1,461
11	No	69,812	0	69,812
11A	No	17,491	9,985	27,476
11B	No	1,592	0	1,592
11C	Yes	9,852	0	9,852
		98,747	9,985	108,732

Management Area	Suitable for Timber Production	Management Area Acreage W/out Proposed Wilderness	With Proposed Wilderness	Total Acres
12	No	45,354	47	45,401
12A	No	120	0	120
		45,474	47	45,521
13	Yes	26,990	212	27,202
13A	No	13,176	0	13,176
13B	No	142	0	142
13C	Yes	738	0	738
13D	No	5,662	0	5,662
		46,708	212	46,920
14	No	8,020	0	8,020
15	Yes	491,721	983	492,704
15A	Yes	11,068	388	11,456
15B	Yes	2,054	0	2,054
15C	Yes	8,166	0	8,166
15D	Yes	1,999	0	1,999
15E	Yes	8,900	0	8,900
		523,908	1,371	525,279
16	Yes	17,089	678	17,767
16A	Yes	1,722	0	1,722
16B	Yes	312	0	312
16C	Yes	443	0	443
		19,566	678	20,244
17	Yes	10,705	0	10,705
18	No	13,838	0	13,838
19	No	0	15,368	15,368
20	No	3,574	0	3,574
21	No	996,381	0	996,381
22	No	73,573	0	73,573
Total		2,232,247	98,080	2,330,327

670,670 = Acres suitable for timber production

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Forest Plan Chapter IV, pages IV-1 through IV-153, was amended as follows:

IV. Subbasin and Geographic Unit Descriptions and Priorities

To be effective, planning and implementing management direction requires consideration of several geographic scales.

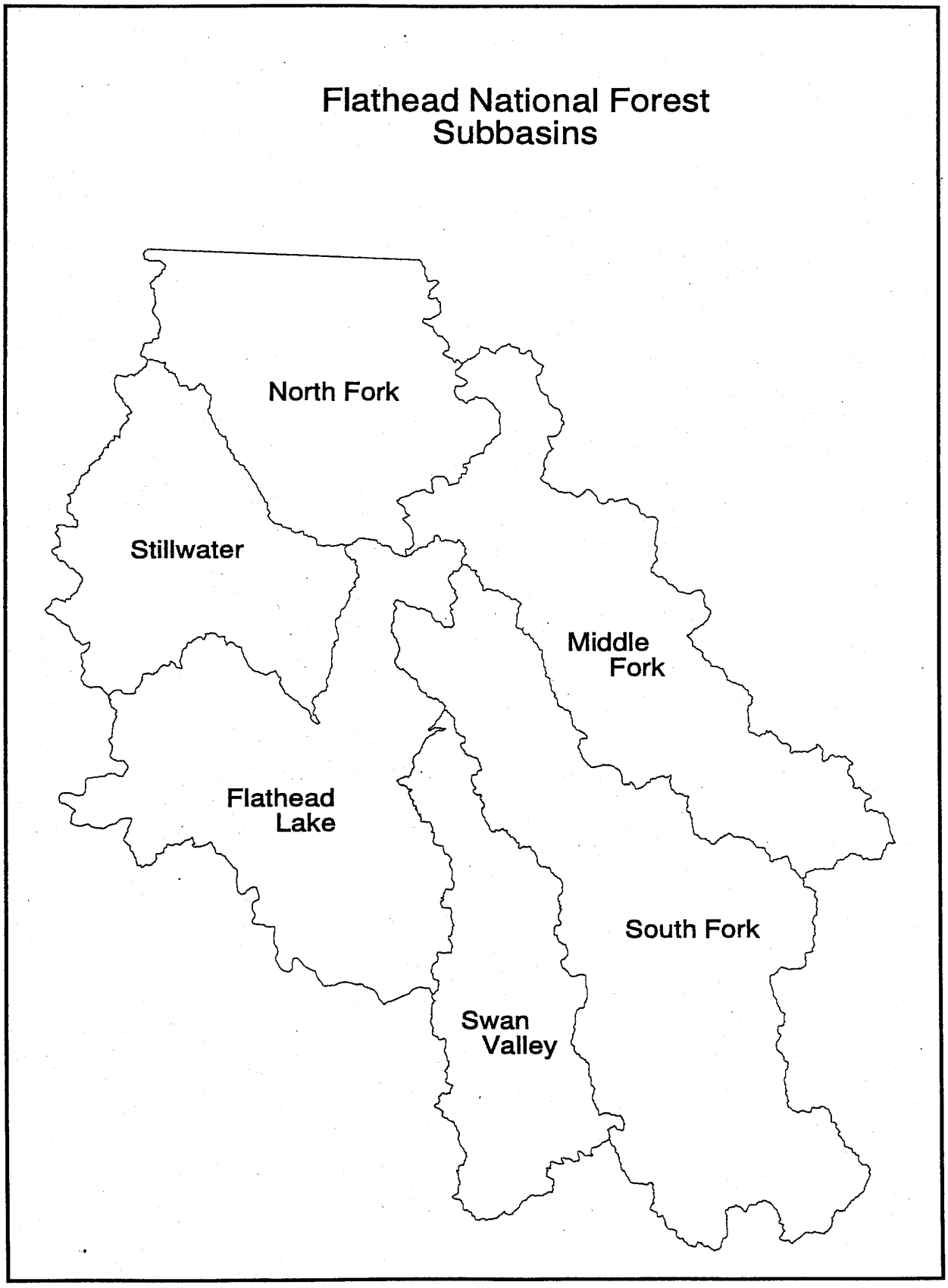
Broad-scale assessments, such as the Interior Columbia Basin Ecosystem Management Project, provide a context for Forest-level planning. The Columbia Basin Science Integration Team used Ecological Reporting Units (ERU) to characterize biophysical environments and ecological processes, observe trends from past management, and identify management opportunities. The Flathead National Forest lies within the Northern Glaciated Mountains Ecological Reporting Unit, which extends from the Cascade crest of Washington, across northern Idaho to the Continental Divide in northwestern Montana.

Each Ecological Reporting Unit was sub-divided into Subbasins. Various ratings of ecological integrity were assigned to Subbasins. Seven Subbasins encompass the Flathead National Forest: Flathead Lake, Lower Flathead, North Fork Flathead, Middle Fork Flathead, South Fork Flathead, Swan, and Stillwater (see Fig. 17).

In this section of the Forest Plan, the physical, biological, and social characteristics, as well as the management history of each Subbasin, are briefly described. The various ratings of ecological integrity developed through the Interior Columbia Basin Ecosystem Management Project are also presented. Management priorities for the Subbasin are identified.

Subbasins are further divided into Geographic Units (maps can be found in Appendix M). A summary of possible future management opportunities within each Subbasin, identified to Geographic Unit where possible, can be found in Appendix M.

Fig. 17. Map of Subbasins



SWAN SUBBASIN

469,278 acres (all ownerships)
282,462 acres (Flathead National Forest land only)

A. CHARACTERISTICS OF THE SUBBASIN

The Swan Subbasin is bounded by the Swan Range to the east, the Mission Mountains Range to the west, and the Clearwater Divide to the south. This subbasin encompasses the entire Swan River system including Swan Lake.

The main valley is roughly 65 miles long and 9 miles wide, narrowing to about one mile in width along Swan Lake. Elevations range from slightly under 3,000 feet to over 9,000 feet. Upper timberline is at approximately 7,000 feet. The subbasin is roughly bisected by the Swan River, which flows generally north to where it enters Flathead Lake.

Land ownership in the subbasin is mixed. Approximately 60 percent of the land is managed by the Flathead National Forest (a large part of this is designated or proposed wilderness), 20 percent by Plum Creek Timber Company, 10 by the Swan River State Forest, and 10 percent by other, mainly private, landowners. The communities of Bigfork, Ferndale, Swan Lake, Salmon Prairie, and Condon are located within the subbasin.

A large portion of the subbasin is covered with montane and subalpine conifer forests supporting over a dozen species of conifers. Lodgepole pine stands are quite common throughout the subbasin. On the Swan Range side of the subbasin, at lower elevations, Ponderosa pine and Douglas fir are more common to the south, with Grand fir and Douglas fir more common to the north. On the Mission Range side, at lower elevations, stands typically have a mixture of 4-7 tree species, with 2-3 overstory dominants, notably western larch, Douglas-fir, and Engelmann spruce. Higher timberline zones are partially forested with whitebark pine, subalpine fir, and subalpine larch. Mountain hemlock are also found at higher elevations in the southern part of the Mission Range.

Drier forest types often have beargrass/huckleberry understory. In moist forest types, there is typically a well developed shrub layer, e.g., menziesia, alder, mountain maple, huckleberry, etc. The wetland complexes, which were historically influenced by beavers, include sites that support many sensitive plant species and the threatened species, water howellia.

Unique values and characteristic features that are especially noteworthy:

<u>Human Uses</u>

Extensive intermingled ownership pattern occurs in the lower elevations.
Mission Mountains Wilderness is largely within this Subbasin.
Western portal to Bob Marshall Wilderness complex.
Jewel Basin-- a special designated hiking area.
Diverse recreation uses including hiking, camping, firewood cutting, snowmobiling, fishing, and hunting.
Extensive road network and logging in the valley bottom.

Terrestrial Ecosystems

Ponderosa pine types are increasingly rare and isolated/fragmented, with increasing dominance of Douglas-fir on sites historically occupied by ponderosa pine.
Whitebark pine communities are in decline.
High concentration of rare plants, including the threatened species, water howellia.
Conservation strategy to coordinate grizzly bear management between various land owners.
Nesting bald eagles and peregrine falcons (threatened and endangered species).
Full complement of terrestrial wildlife species historically found in valley.

Aquatic Ecosystems

Presence of many fens, lakes and pothole ponds.
Bull trout population is considered stable.
Presence of native populations of westslope cutthroat trout.
Introduced game fish include rainbow trout and brook trout.

B. SWAN SUBBASIN HISTORY

The following table displays the number of acres of timber harvest by decade on National Forest lands in the Swan Subbasin.

Timber harvest history on National Forest lands

Decade	Regeneration Harvest (acres)	Intermediate Harvest (acres)	Selection Harvest (acres)
1950s	3,440	45	8
1960s	12,925	2,351	222
1970s	8,338	4,048	710
1980s	5,830	5,870	377
1990s	884	528	0
Total	31,417	12,842	1,317

The following table displays the number of acres burned by wildland and prescribed fires across all ownerships in the Swan Subbasin.

Acres of wildland and prescribed fires in the Swan Subbasin

Decade	Wildland Fire (acres within perimeter)	Prescribed Fire 2/ (acres)
1910-1919	33,487	0
1920-1929	6,255	0
1930-1939	10,052	0
1940-1949	0	0
1950-1959	167	0
1960-1969	1,616	0
1970-1979	524	0
1980-1989	759	751
1990-present	211	2,589
Total	53,071	3,470

2/ **Prescribed fire** includes fires intentionally ignited to meet planned objectives. Prescribed fires are analyzed in detail to determine the risks associated with their unique location and conditions at the time of the ignition. The acres of prescribed fire are on National Forest lands only; wildfire acres are across all ownerships. The objectives of prescribed burns were primarily for wildlife habitat enhancement or natural fuels reduction.

C. MANAGEMENT PRIORITIES FOR THE SWAN SUBBASIN

In the context of the Interior Columbia Basin, the Swan Subbasin was classified as Forest Cluster 3, indicating aquatic systems that are in relatively good condition, but forests that are highly altered and in poor condition.

Integrity Ratings for the Swan Subbasin (from Quigley and others 1996):

Forest	Aquatic	Hydrology	Composite
Low	Moderate	High	Moderate

Priorities for vegetation management include restoring large single-story and large multistory stand structures in ponderosa pine, western larch, and Douglas-fir cover types, on warm dry, warm moist, and cool moist potential vegetation groups, and prescribed burning of deer and elk winter ranges. The most extensive opportunities for these treatments are found in the Condon and Sixmile Geographic Units.

Western white pine and western larch restoration opportunities are found on warm moist sites at lower elevations, and whitebark pine restoration opportunities are found throughout the Subbasin at the higher elevations.

Bark beetle risk is currently considered *High* in portions of the Goat and Fatty Geographic Units. Risk is generally *Moderate* to *Low* in the Sixmile, Condon, and Lindbergh Geographic Units.

A management priority is to reduce the risk of severe fire in the urban-wildland interface. Fire hazard is considered *High* in portions of the Sixmile, Goat, East Shore, and Fatty Geographic Units, and is generally *Moderate* to *Low* in the Condon and Lindbergh Geographic Units.

The highest priorities for watershed restoration in this subbasin are found in the Fatty and Lindbergh Geographic Units. All geographic units, except Sixmile, contain priority bull trout watersheds. All geographic units have opportunities for cutthroat restoration.

Within this subunit, access management and activity scheduling are coordinated across land ownerships by the Swan Valley Grizzly Bear Conservation Agreement.

Protection and management of the Mission Mountains Wilderness is a priority for this subbasin.

D. GEOGRAPHIC UNITS WITHIN THE SWAN SUBBASIN

Condon Geographic Unit - The Condon Geographic Unit is about 72,600 acres in size, of which 46,000 acres (63%) are managed by the Forest Service. Most of the non-Federal lands are owned by Plum Creek Timber Company, which manages its lands for long-term timber production.

The valley bottomlands make an abrupt transition to steep mountain slopes of the Swan Mountains. The higher elevation land is mostly unroaded and has been proposed for wilderness designation. The Condon Creek Botanical Special Interest Area, which includes numerous ponds containing water howellia populations or suitable habitat, is located in this unit.

Forests in the lower elevations developed under a frequent fire interval (non-lethal fire regime). There are numerous ponderosa pine, western larch, and Douglas-fir found at low-to-mid elevations, along with lodgepole pine stands. Upper elevations support mixtures of subalpine fir, Engelmann spruce, and the fire regimes are mixed or lethal.

There are two grizzly bear BMU subunits in the Condon Geographic Unit. The unit provides the majority of white-tailed deer winter range in the Swan Subbasin.

The Condon unit is relatively dry and the streams have lower volume than others in the subbasin. The unit contains a disjunct bull trout population (Holland Lake) and two priority bull trout watersheds. Lion Creek is considered to have very high integrity.

There is a large developed campground, resort, and private recreation residences under special-use permit at Holland Lake. The Owl Creek Packer Camp serves as a major trailhead, providing access to the Bob Marshall Wilderness Complex.

Lindbergh Geographic Unit - The Lindbergh Geographic Unit is the largest geographic unit in the Swan Subbasin. The total area is about 140,000 acres, of which 93,400 acres (67%) are managed by the Forest Service. The upper elevations make up the Mission Mountains Wilderness. Most of the non-Federal lands are owned by Plum Creek Timber Company, which manages its lands for long-term timber production. The western edge of the unit borders the Flathead Indian Reservation. There are management concerns about fire along this boundary.

The terrain is characterized by a broad valley floor, foothills, and the steep rugged terrain of the Mission Mountains. The lower elevation bottomlands contain extensive wetlands. Streams are relatively stable and cold, due to areas of groundwater influence and high mountain lake runoff.

At lower elevations, ponderosa pine, Douglas-fir, subalpine fir, and spruce are common and the fire regime is typically mixed severity. At higher elevations, true fir and spruce are common, along with mountain hemlock and other tree species. Upper elevations fall within the mixed and lethal severity fire regimes.

The Lindbergh Geographic Unit contains a disjunct population of bull trout (Lindbergh Lake) and five priority bull trout watersheds. Elk Creek is considered to have very high integrity.

Lindbergh Lake and trailheads to the Mission Mountains Wilderness draw recreationists to the area. The unit receives a fair amount of fishing pressure in the mountain lakes. There are private homeowners around Lindbergh Lake and homes scattered throughout the lower elevation lands.

Forest fires burned over large portions of the unit in 1919 and created extensive lodgepole pine forests. The combination of thick lodgepole pine stands and intermingled private land sets up a future "urban interface" problem for control of wildland fires.

This unit contains the largest grizzly bear security core area in the Swan Subbasin and a large amount of low-elevation grizzly bear spring range. The Swan-Clearwater Divide, at the south end of the unit, is used as a travel corridor by grizzly bears. In the past, grizzly bear were relocated to the unit to augment the Mission Mountains sub-population, but that resulted in concerns from the local residents about "nuisance" bears.

The unit contains a sizable mountain goat population at higher elevations, primarily in the wilderness area. The unit contains productive white-tailed deer summer range.

Fatty Geographic Unit - The Fatty Unit is on the west side of the valley, south of Swan Lake. The geographic unit totals about 68,000 acres of land, of which the Forest Service manages 36,900 acres (54%). Plum Creek and the Swan River State Forest are the other major land managers in the unit. The lower elevations are typically managed for timber production. The western edge of the unit is designated wilderness and it borders a portion of the Flathead Indian Reservation. There are concerns about how to manage fires along this border.

The north end of the unit has characteristics of Pacific and Inland Empire forests - mesic/ moist/ warm habitat types capable of supporting western redcedar and grand fir. Whitebark pine communities are found at upper elevations. Fire regimes run from mixed to lethal severity.

The unit includes the 682-acre Swan River Research Natural Area, which was established to conserve unique forest habitat types - grand fir, subalpine fir, wetern redcedar, larch, and Engelmann spruce. The Nature Conservancy established the Swan Oxbow Preserve to conserve unique wetlands. The Swan River National Wildlife Refuge is located at the south end of Swan Lake, and is managed with a waterfowl production emphasis.

The Fatty geographic unit encompasses two grizzly bear BMU subunits.

The unit is heavily roaded and the Porcupine drainage is used extensively by snowmobilers.

Streams in this unit contain abundant brook trout and once supported cutthroat trout. There is one priority bull trout watershed in the unit.

Goat Geographic Unit - The Goat Unit is on the east side of the Swan Valley, south of Swan Lake. The unit totals about 103,000 acres, of which the Forest Service manages 56,800 acres (55%). Most of the remaining acreage is owned and managed by the State of Montana (Swan River State Forest), Plum Creek Timber Company, and small private landowners. The lower elevations are typically managed for timber production.

There are numerous avalanche chutes at the heads of drainages. Higher elevation areas are unroaded. The Bob Marshall Wilderness bounds the eastern side of the Goat unit.

Major tree species include ponderosa pine, western larch, and Douglas fir at low-to-mid elevations, along with lodgepole pine stands. Fire regimes are typically mixed severity. Upper elevations include mixtures of subalpine fir, Engelmann spruce, and typically have mixed or lethal fire regimesl. The Swan Lake Ranger District recently used prescribed fire to restore whitebark pine in the Lion Creek drainage.

There are three grizzly bear BMU subunits within the Goat Geographic Unit. Portions of the lower elevation land provide winter range habitat for deer.

There are two priority bull trout watersheds within the geographic unit. Cutthroat and brook trout are also common.

Sixmile Geographic Unit - The Sixmile Geographic Unit is in the northern portion of the Swan Valley, which is much narrower than the southern portions of the valley. The unit totals about 85,000 acres, of which the Forest Service manages 49,600 acres (58%). The remaining acreage is owned by small private landowners, and included within the boundaries of the unit are the towns of Swan Lake, Ferndale, and part of Bigfork.

The ridge of the Swan Range bounds the unit on the east and the ridge along Crane Mountain bounds the unit on the west. The unit is bisected by the Swan River, which empties into Flathead Lake at Bigfork.

The unit supports a number of tree species, including: Douglas-fir, western larch, lodgepole pine, western white pine, subalpine fir, Engelmann spruce, whitebark pine, and western red cedar. Beetle infestations have led to recent salvage timber harvesting in the areas of Crane Mountain on the west side of the Sixmile Unit. A cold spell in the late 1980s led to mortality of a large number of western white pine in the unit. Fire regimes run from mixed to lethal severity.

The unit provides habitat to a number of wildlife species, including grizzly bear, deer, and elk. The mid-to-upper slopes of the Swan Range historically burned back brush fields, which provide winter range for deer and elk. The Swan Lake Ranger District uses prescribed fire as a tool to rejuvenate these areas.

There are no priority bull trout watersheds in this unit. Bull trout are found in Swan Lake. Tributary streams have high potential for cutthroat restoration. The dam at Bigfork prevents upstream migration from Flathead Lake and the rest of the Flathead River system.

Swan Lake attracts many summer tourists and there are numerous homes surrounding the lake, particularly along the north and east shores. Many of the homes have been recently built near National Forest lands and are in the ``urban-wildland interface". There is a developed recreation site at the south end of the lake, which includes a recently reconstructed campground, picnic area, and boat launch. Fishing is very popular year-round. The unit has high visual significance and the Swan Highway provides views of both the Swan Range and Mission Mountains Range.

NORTH FORK FLATHEAD SUBBASIN

612,763 acres (all ownerships within the U.S.)
290,187 acres (Flathead National Forest land only)

A. CHARACTERISTICS OF THE SUBBASIN

The North Fork Flathead Subbasin is bounded by the Whitefish Range to the west and the Livingston Range to the east. The headwaters of the North Fork drainage lie within British Columbia, Canada.

In the United States, the western side of the river is predominantly National Forest land administered by the Flathead National Forest, while the eastern side lies within Glacier National Park. Other ownerships include the Coal Creek State Forest and tracts of private land. The communities of Polebridge and Moose City lie within the Subbasin, while Columbia Falls and Hungry Horse are located immediately to the south.

This Subbasin description focuses on the lands on the western side of the North Fork River. General characteristics of the lands within Glacier National Park are not included. Unique values and characteristic features that are especially noteworthy:

<u>Human uses</u>

The North Fork River forms the boundary with Glacier National Park.
Historic cabins and lookouts were established for administrative use and trapping.
Early settlement (homesteading) occurred near Trail Creek, Polebridge and surrounding areas. This led to private ownership in the valley bottom along the North Fork River and continuing development.
A small amount of mining has occurred within the Subbasin.
Popular recreation uses including hiking, camping, driving, rafting, firewood cutting, berry picking, hunting, fishing, and snowmobiling.
A groomed snowmobile trail system is in place within the Canyon Creek Drainage and along the Whitefish Divide.
Long term research projects have been carried out within this Subbasin. The Subbasin is a desirable study area because of the intactness of terrestrial and aquatic ecosystems.

<u>Terrestrial Ecosystems</u>

Forests are predominantly mixed species featuring Douglas-fir, western larch, lodgepole pine, subalpine fir, and spruce.
Dry ponderosa pine communities are rare in the North Fork; some are found in a portion of lower Big Creek, Demers Ridge, and in the main Red Meadow valley.
Cold moist habitats are dominated by lodgepole pine and spruce (frost-prone sites) in the northern and western portions of the Subbasin.
Whitebark pine communities and western white pine communities are in decline.
High populations of moose inhabit the Subbasin.
Bald eagles nesting territories occur in the Subbasin.
Presence of wolf packs.
Relatively high density of grizzly bears are found in the North Fork.
Rare presence of western redcedar in Canyon, Coal and Whale Creeks.
Presence of fens supporting rare plants, especially on south end of the Subbasin.

Presence of a wide range of forest carnivores.

Aquatic Ecosystems

Large adfluvial migratory populations of bull trout that cross the international boundary.
Population center for nesting harlequin ducks.
North Fork of the Flathead River is designated under the Wild and Scenic Rivers Act as "Scenic" (northern portion) and "Recreational" (southern portion).
Common loons nest on larger lakes.
Broad, low gradient stream systems.
Alluvial valleys with wet, cirque basins in the headwaters.
International issues related to watersheds and water quality.

B. NORTH FORK FLATHEAD SUBBASIN HISTORY

Since the 1940s, commercial timber harvest has occurred in the North Fork Flathead Subbasin. During the 1950 - 1960's era, timber harvest was concentrated in mature spruce stands, and mixed species stands with spruce, in the mid to high upper reaches of many of the drainages where spruce bark beetle was epidemic. Primary harvest methods utilized during this period were clearcutting and overstory removal.

The purpose of commercial timber harvest since the 1960s has been a combination of white pine salvage, harvest of blowdown trees, fire/insect/disease salvage, harvest to reduce the risk of epidemic insect outbreaks, and general timber production. Major timber sales have also occurred throughout the past 50 years on private and State lands in the North Fork. Regeneration harvest methods have been a common practice on these lands.

White pine blister rust began having a major impact on western white pine in the North Fork in the 1960s. Salvage of white pine has occurred from that period throughout the 1980s, generally through regeneration harvest in mixed species stands of Douglas-fir, western larch, and western white pine.

Blowdown is a common occurrence in portions of the North Fork area, and salvage of these trees has occurred throughout the past 50 years of recorded data. A mountain pine beetle epidemic had a significant impact on lodgepole pine and whitebark pine stands from the mid-1970s to the early 1980s. Approximately 13,000 acres of commercial harvest during this period is largely attributable to that situation.

The following table displays by decade approximate harvest acreages within this Subbasin on National **Forest system lands**. Documentation of harvest levels prior to the 1950s is not readily available and is not included, although it is recognized that harvest did occur prior to 1950 on the National Forest lands. Harvest during this time period was generally individual tree or group selection.

Timber harvest history on National Forest lands.

Decade	Regeneration Harvest (acres)	Salvage/ Intermediate Harvest (acres)	Selection Harvest (acres)
1950s	9,030	2,884	0
1960s	14,374	4,009	148
1970s	13,475	12,419	0
1980s	4,402	9,532	0
1990s	1,466	1,308	56
Total	42,747	30,152	204

The following table displays the approximate acres of wildland fire by decade on the west side of the North Fork River (does not include acres of wildland fire within Glacier National Park). Acreages were estimated either from aerial photos or on the ground. In most cases, the fires burned the areas in varying degrees over the landscape, and reburns of previously burned areas was common. Total acres within fire perimeters were reported, summed for the decade. Reburned areas would be counted each time they burned. The overall trend indicates a decrease in the acres burned per decade, probably as a result of fire suppression efforts.

Acres of wildland fire on National Forest lands.

Decade	Wildland Fire
1910-1919	72,000 acres
1920-1929	76,500 acres
1930-1939	200 acres
1940-1949	500 acres
1950-1959	200 acres
1960-1969	300 acres
1970-1979	2,000 acres
1980-1989	10,100 acres
1990-present	1,100 acres
Total	162,900 acres

The last large wildland fire in the Subbasin was the Red Bench Fire of 1988. This occurred in the Polebridge area and burned approximately 30,000 acres, of which approximately 4,400 acres was on private land and 5,700 acres was on National Forest lands. The remainder was within Glacier National Park. Approximately 300 acres of the burned area on National Forest lands were salvage logged in the late 1980s to early 1990s.

C. MANAGEMENT PRIORITIES

In the context of the Interior Columbia River Basin, the North Fork Flathead Subbasin was classified as high ecological integrity, and placed into Forest Cluster 1. Although the overall ratings for the Subbasin appear to be correct, there is considerable variation of conditions within the drainage.

The eastern portion lies within Glacier National Park, which has high ecological integrity. Within the western portion, substantial differences exist between Geographic Units in terms of management history and current conditions.

Integrity Ratings for the North Fork Flathead Subbasin (from Quigley and others 1996):

Forest	Aquatic	Hydrology	Composite
High	Moderate	High	High

Priorities for vegetation management throughout the Subbasin include restoration of whitebark pine stands that have been heavily impacted by white pine blister rust; conservation of large multistory stands, and prescribed burning on elk and deer winter ranges. Bark beetle risk is considered Moderate in the Coal Creek, Werner Creek, and Big Creek drainages; risk in other drainages of this Subbasin are currently rated as Low.

High priority drainages for watershed restoration are located in the Red Tepee, Hay Coal, Big Creek, and Canyon Geographic Units.

Conserving the high quality of grizzly bear habitat is a priority throughout the Subbasin. Current priorities for restoration are to increase habitat security within the Lower Whale, Red Meadow Moose, Hay Creek, Werner Creek, Lower Big, and Canyon McGinnis BMU Subunits.

Priorities for scenery management include restoration in the drainages at the southern end of the Subbasin, maintaining or creating views into Glacier National Park along the North Fork Road, and conserving high scenic values in the northern end of the Subbasin.

Within the Wild and Scenic River corridor, priorities include maintaining the high scenic quality and emphasis on implementing "leave no trace" practices.

Maintain and or restore adequate habitats to sustain the predator/prey relationships emphasizing the ungulate needs. Continue coordination with Montana Dept. of Fish, Wildlife and Parks to provide for wildlife habitat needs.

Continue to identify research needs in the North Fork, in coordination with Glacier National Park, Montana Dept. of Fish, Wildlife and Parks, U.S. Fish and Wildlife Service, and the universities, with an emphasis on forest carnivores.

D. GEOGRAPHIC UNITS

Trail Creek Geographic Unit - This is the northernmost unit in the North Fork Flathead Subbasin. Much of this area has a special management area designation in recognition of its importance as grizzly bear habitat.

This unit was extensively burned in 1910, 1917, and 1929 fires. Large areas regenerated to stands of lodgepole pine, which is now nearing maturity. This Geographic Unit may contain some of the healthiest stands of whitebark pine in the Subbasin, including sapling and pole size stands.

This Geographic Unit provides bull trout spawning habitat in Whale Creek and Trail Creek. Both are closed to fishing.

Harlequin ducks are known to breed in Trail Creek.

Tuchuck Research Natural Area is located in this Geographic Unit.

Recreation use is low, due to remoteness. The Trail Creek road crosses the divide to the Eureka area. Much of the recreation use is by locals from the Eureka, Fortine, and Trego areas.

Red Tepee Geographic Unit - The highest peak in the Subbasin, Nasukoin Peak at 8,086 feet elevation, occurs in the Red Tepee Geographic Unit. Large stands of alpine larch occur on the slopes of Nasukoin and other peaks in the Whitefish Range.

This area is known for its high quality grizzly bear habitat. Whitebark pine is an important component of the ecosystems in this Geographic Unit.

A big sagebrush community occurs along the North Fork River at Sonderson Meadow.

Lower elevation lakes and streams provide nesting and feeding habitat for bald eagles and common loons.

Recreation facilities include campgrounds, trails, and a scenic road crossing Whitefish Divide. A snowmobile trail is groomed from Olney to Red Meadow Lake.

Hay Coal Geographic Unit - The Coal Creek State Forest occurs in the lower portion of the Coal Creek drainage.

The valley bench area consists of glacial tills deposited by a valley glacier. These soils are easily eroded when vegetation cover is removed. A considerable amount of land along the river bottoms and lower benches are privately owned. Higher portions of the unit are characterized by steep, narrow, glaciated canyons. There are several small alpine lakes in the headwaters.

Lower elevation lakes and streams provide nesting and feeding habitat for bald eagles and common loons.

Coal Creek is closed to fishing to protect spawning bull trout. A genetically isolated strain of westslope cutthroat trout inhabits Hay Lake.

Recreation use moderate in this Geographic Unit.

Important bull trout habitat occurs in these drainages.

Big Creek Geographic Unit - This watershed drains eastward into the North Fork of the Flathead River, and also features a narrow, 4-mile long ridge (Demers Ridge) which parallels the river. There are approximately 1,700 acres of private land within this unit.

An extensive road network was developed in Big Creek to facilitate the removal of trees that died from insect and pathogen epidemics. Timber harvest was concentrated in the creek bottoms where much of the spruce mortality occurred, and on side slopes in the lower part of the drainage for regeneration harvests in the 1970s and 1980s. Corporate timberland in the headwater basin of Big Creek was clearcut in response to the spruce beetle epidemic.

This area has been identified as an important travel route for grizzly bears traveling to and from Glacier National Park along the Smokey Range Divide. This unit includes most of the big game winter habitat on the western side of the river.

Big Creek is an important bull trout and westslope cutthroat trout spawning stream, and therefore is closed to fishing.

Canyon Geographic Unit - This is the southernmost Geographic Unit within the North Fork Flathead Subbasin. Topography is steep, with narrow, alpine-glaciated canyons extending south and east to the Flathead River.

Western white pine, western redcedar, and hemlock grow in this area. Extensive stands of whitebark pine occur on the Whitefish Divide and the Smokey Range. Small fens supporting rare plant populations occur in the Geographic Unit.

Due to its proximity to towns, this geographic unit receives heavy recreation use, particularly for pleasure driving, huckleberry picking, firewood collection, hunting, and snowmobiling. Two roads provide loop drives.

The Big Mountain Ski Area is a focal point of recreational activities during both winter and summer seasons. There is a groomed snowmobile trail up Canyon Creek to the summit of Big Mountain.

MIDDLE FORK FLATHEAD SUBBASIN

721,446 acres (all ownerships within the Subbasin)
367,655 acres (Flathead National Forest land only)

A. CHARACTERISTICS OF THE SUBBASIN

The Middle Fork Flathead Subbasin is bounded by the Continental Divide to the east. The Middle Fork of the Flathead River forms the boundary between Glacier National Park and the Flathead National Forest. Approximately one half of the Subbasin is National Forest lands, with the remainder mostly within Glacier National Park. Relatively little of this Subbasin is in private ownership. The communities of Essex and West Glacier are found within this Subbasin.

Approximately two thirds of the National Forest lands in this Subbasin are within the Great Bear and Bob Marshall Wilderness Areas.

This Subbasin description focuses on the lands on the southern side of the Middle Fork River. General characteristics of the lands within Glacier National Park are not included. Unique values and characteristic features that are especially noteworthy:

<u>Human uses</u>

Most of the National Forest land lies within the Great Bear Wilderness Area.
Early settlement activities included construction of the railroad, summer homes, etc.
High use by outfitter/guides historically and currently.
Forest Service administrative cabins and work centers.
Popular recreation uses including hiking, camping, rafting, firewood cutting, and hunting.
The most used and popular segment of the Wild and Scenic River for rafting is from Moccasin Creek to West Glacier.
Regeneration harvesting and road building occurred on lands now within the Great Bear Wilderness.
Historic sheep and cattle grazing occurred in what is now part of designated wilderness and within the Wild and Scenic River Corridor.

<u>Terrestrial Ecosystems</u>

Whitebark pine communities on ridgetops are in decline.
Rare local presence of western redcedar; virtually no ponderosa pine types.
Grizzly bear movement between Glacier National Park and the Wilderness complex.
Presence of mountain goats.
Evidence of past underburning in lodgepole stands in the Upper Middle Fork.
Occurrence of root diseases within mid-slope Douglas-fir dominated stands.
Very few fire starts historically above Schafer Meadows.
Skyland area is very unique with regards to wind patterns, geology, soils, etc.

<u>Aquatic Ecosystems</u>

Narrow stream valleys.
Middle Fork of the Flathead included in the Wild & Scenic River system, "Wild" and "Recreational" segments.
Large adfluvial migratory population of bull trout.
Nesting population of harlequin ducks.

B. MIDDLE FORK FLATHEAD SUBBASIN HISTORY

Commercial timber harvest has occurred in the Middle Fork since the 1960s. Harvest during the 1960s to early 1970s era was concentrated in mature spruce stands, in mixed species stands with spruce, and in the high upper reaches of many of the drainages where spruce bark beetle was epidemic. The primary harvest method utilized during this period was clearcutting.

Although western white pine is not a dominant species in the Middle Fork, white pine blister rust began having an impact on the white pine in the Middle Fork in the 1970s. Some salvage of white pine has occurred from that period throughout the 1980s, generally in mixed species stands of Douglas-fir, western larch, and western white pine.

There have been no major insect or disease outbreaks in the Middle Fork during the past 30 years. It is documented that the presence of root rot is increasing within mid-slope Douglas-fir dominated stands. There has also not been large areas of wildland fire activity. Significant blowdown has occurred occasionally, the most recent being in the late 1980s. This is most common in the Skyland, Challenge, and Morrison drainages. The purpose of the commercial timber harvest since the 1960s has been a combination of white pine salvage, general blowdown and insect/disease salvage, and general timber production.

The following table displays by decade approximate harvest acreages within this Subbasin on **National Forest system lands**. Documentation of harvest levels prior to the 1950s is not readily available and is not included. Some minor amounts of salvage logging may have occurred in the valley bottom along the river corridor.

Timber harvest history on National Forest lands.

Decade	Regeneration Harvest (acres)	Salvage/ Intermediate Harvest (acres)	Selection Harvest (acres)
1950s	0	0	0
1960s	328	378	0
1970s	2,518	673	0
1980s	4,402	20	0
1990s	468	675	0
Total	7,716	1,746	0

The following table displays the approximate acres of wildland fire and prescribed fire (occurred with natural ignition and had an approved plan for management) that have been recorded on National Forest lands within the Subbasin. Acreage both within and outside the Great Bear Wilderness were estimated from photography or on the ground. In most cases, the fires burned the areas in varying degrees over the landscape, and reburns of previously burned areas was common. The overall trend indicates a decrease in fire activity in recent decades.

Acres of wildland fire on National Forest lands.

Decade	Wildland Fire	Prescribed Fire 1/
1880-1909	11,000 acres	0 acres
1910-1919	186,470 acres	0 acres
1920-1929	29,000 acres	0 acres
1930-1939	1,400 acres	0 acres
1940-1949	0 acres	0 acres
1950-1959	500 acres	0 acres
1960-1969	0 acres	0 acres
1970-1979	0 acres	0 acres
1980-1989	844 acres	0 acres
1990 - present	660 acres	150 acres
Total	229,874 acres	150 acres

1/ Prescribed fire is defined as a fire started by a natural ignition, that meets planned objectives and had a plan approved in advance of the fire start. This is dependent on relatively unpredictable lightning activity. Each individual fire start is analyzed in detail to determine the risks associated with its unique location and time of the year in relation to the approved plan.

C. MANAGEMENT PRIORITIES

In the context of the Interior Columbia River Basin, the Middle Fork Flathead Subbasin was classified as high ecological integrity, and placed into Forest Cluster 1. Like the North Fork, a portion of the Subbasin lies within Glacier National Park. The mid and upper elevations of the National Forest in this Subbasin are largely included within the boundaries of the Bob Marshall and Great Bear Wilderness Areas.

Integrity Ratings for the Middle Fork Flathead Subbasin (from Quigley and others 1996):

Forest	Aquatic	Hydrology	Composite
High	Moderate	High	High

Priorities for vegetation throughout the Subbasin include restoration of whitebark pine stands that have been heavily impacted by white pine blister rust, conservation of Large Multistory stands, and prescribed burning on elk and deer winter ranges. Bark beetle risk is considered *Moderate* in some drainages of the Paolo and Skyland Geographic Units, and *Low* or *Unknown* within the Long and Schafer Geographic Units. Fire hazard is considered *High* only for the Dickey-Java area, and generally is *Low* in the remainder of the Subbasin.
Manage vegetation to increase the dominance of seral species (larch primarily) and diversity of stand structure across the landscape. Linkages with Glacier National Park are especially important related to the seral species maintenance and stand structure diversity.

Watershed restoration priorities have been considered Low across most of this Subbasin, with *Moderate* priority for some areas in the Skyland Geographic Unit.

The Middle Fork Flathead Subbasin provides high quality grizzly bear habitat with excellent security. Maintain movement linkages with Glacier National Park to the north, and the South Fork Flathead Subbasin to the south.

Scenery as viewed into and from the National Park and the Wild and Scenic River corridor are currently high.

In the Great Bear and Bob Marshall Wilderness Areas, vegetation management will depend solely on prescribed fire opportunities. There is a continuing buildup of fuels as a result of windstorm events, soils, and age/structure of the vegetation. Recent records indicate there are not a large number of fire starts in the Middle Fork. The relative small size of the Subbasin and proximity to the Continental Divide with its associated strong winds does make prescribed natural fire a higher risk than in other locations in the wilderness.

D. GEOGRAPHIC UNITS WITHIN THE MIDDLE FORK FLATHEAD SUBBASIN

Schafer Geographic Unit - This unit lies entirely within the Great Bear and Bob Marshall Wilderness Areas. The area is dominated by dense lodgepole pine forest, with alpine larch and whitebark pine at the upper elevations. This geographic unit is all at elevations above 5000 ft.

Pentagon Mountain is a dominant feature in this unit. The Ranger Station is a significant historic site.

Aircraft use of the landing strip at Schafer is permitted, with limits on the number of landings. Backcountry recreation uses include backpacking, hunting, and fishing.

Long Creek Geographic Unit - This geographic unit lies within the Great Bear Wilderness Area, below Schafer Meadows to Bear Creek. This area is deep canyon country, with extensive avalanche chutes. The lower elevations provide big game winter range.

Backcountry recreation uses include backpacking, hunting, and fishing. The beginning of the designated Wild and Scenic River is in this geographic unit. Whitewater rafting on the upper Middle Fork has increased substantially. Flotilla and Scott Lakes are large lakes that attract recreation use.

Skyland Geographic Unit - Marias Pass, on the Continental Divide, is the northernmost point on this unit. Highway 2 and Burlington Northern Railroad tracks run adjacent to the Middle Fork, with National Forest land to the south and east of the river, and Glacier National Park to the north and west of the river. A portion of the unit lies within the Great Bear Wilderness Area. The area is moderately moist and cool. Primary tree species are lodgepole pine, Engelmann spruce, subalpine fir, and Douglas-fir. Terrain is steep to very steep. Drainage patterns in Puzzle Creek are not typical due to geologic folds and faults. Soils are unstable in the Challenge Cabin area, which is east of the Lewis overthrust. Mass failure of cut and fill slopes on roads is very common.

The unit provides summer habitat for elk that winter in the Spruce Park area and important grizzly bear habitat. A small mountain goat population inhabits the Slippery Bill Mountain area. The most important bull trout-spawning habitat in the Middle Fork Flathead Subbasin is found in this unit.

Considerable logging activity occurred in this unit in the past in response to insect and pathogen epidemics. In 1998, a large wildfire burned through much of the non-wilderness portion.

Paola Geographic Unit - This geographic unit is bounded to the east-northeast by the Middle Fork of the Flathead River, and by the Flathead Range divide to the south-southwest. A portion of the Great Bear Wilderness is included within the geographic unit.

Tracts of private land are located adjacent to Highway 2. The communities of Essex and Nyack are found within this geographic unit.

Vegetation is characterized by coniferous forests that are densely stocked at the lower elevations, becoming more open at higher elevations where tall shrubs dominate. Avalanche chutes occur on most slopes and typically are densely covered by shrubs such as maple, alder, willow, thimblebery, and huckleberry. Dominant tree species are Englemann spruce, subalpine fir, Douglas-fir, lodgepole pine, and western larch. Whitebark pine is common at the higher elevations. Most stands consist of 80 to 400+ year old trees, depending on fire history of the site.

This geographic unit is noteworthy for its high quality grizzly bear habitat. The area is important as a linkage for movement between Glacier National Park and the Bob Marshall Wilderness complex.

The Middle Fork provides important habitat for bull trout and cutthroat trout.

Major recreational uses include snowmobiling, commercial and private whitewater rafting, hiking, fishing, and hunting. River access sites have been constructed at Moccasin Creek, Cascadilla Flats, Paola Creek, Essex, and Bear Creek. The Isaac Walton Inn in Essex has become a focal point for cross-country skiing.

The steep slopes are highly visible from highway 2, the train right-of-way, Glacier National Park, and private residences.

SOUTH FORK FLATHEAD SUBBASIN

1,072,573 acres (all ownerships within the Subbasin)
1,072,573 acres (Flathead National Forest land only)

A. CHARACTERISTICS OF THE SUBBASIN

The South Fork Flathead Subbasin encompasses a remarkably large area, bounded to the west by the Swan Mountain range crest and by the Continental Divide to the east. The upper half, (approximately 64%), of the drainage lies within the Bob Marshall and Great Bear Wilderness Areas.

There is no private land within this Subbasin. The communities of Hungry Horse and Martin City lie near the mouth of the South Fork, north of the Subbasin.

Unique values and characteristic features that are especially noteworthy:

Human Uses

More extensive use by Native Americans than other Flathead drainages.
Encompasses majority of the Bob Marshall Wilderness complex -- largest in lower 48 States . (Bob Marshall and Great Bear Wilderness Areas)
Jewel Basin-- a special designated hiking area.
Forest Service administrative cabins and work centers.
High use by outfitters historically.
Hungry Horse dam/reservoir has changed character of drainage.
Resort operations at the Spotted Bear Complex.

Terrestrial Ecosystems

Dry ponderosa pine types in south end of wilderness.
Many "parks" of native grassland and sagebrush in the valley bottom in the upper reaches of the drainage.
Higher growth potential for western larch than anywhere in the Northern Region; larch adjustment factor in cruise tables is only used in the South Fork.
Whitebark pine communities in decline.
Western white pine in decline in the lower reaches of the South Fork.
Localized fens with rare plants in upper reaches of the South Fork.
Rare localized presence of western redcedar.
More extensive elk and mule deer winter ranges than North Fork or Middle Fork.
Mountain goats.

Aquatic Ecosystems

Fully intact native fish species assemblage (unique in western US).
Harlequin ducks, larger number of osprey than other Flathead drainages.

B. SOUTH FORK FLATHEAD SUBBASIN HISTORY

Hungry Horse Reservoir construction began in 1948 and was operational in 1953. Approximately 24,500 acres were cleared/logged for the construction in this time period. This acreage is not included in the harvest table below. The dam reservoir changed the existing habitat availability for many species. The forest structure was modified by removing the valley bottom component. The historical range of variability is not directly applicable to the entire Subbasin, since this activity has been permanently change a portion of the landscape.

Commercial timber harvest has occurred in the South Fork since the early 1940s. During the 1950-1960s era, harvest was concentrated in mature spruce stands, mixed species stands with spruce, and in the high upper reaches of many of the drainages where spruce bark beetle was epidemic. The primary harvest method utilized during this period was clearcutting.

White pine blister rust began having a major impact on western white pine in the South Fork in the 1960s. Salvage of white pine has occurred from that period throughout the 1980s, generally through regeneration harvest in mixed species stands of Douglas-fir, western larch, and western white pine. Extensive individual tree salvage of western white pine also occurred in mature stands.

Other than blister rust, there have been no major insect or disease outbreaks in the South Fork (outside Wilderness) that has led to extensive harvest activity during the past 30 years. Neither has there been large areas of significant blowdown or wildfire activity. The purpose behind the commercial timber harvest since the 1960s has been a combination of white pine salvage, general blowdown and insect/disease salvage, and general timber production. Within the Firefighter and Emery areas, lodgepole pine mortality has been a factor in locating harvest areas. The mountain pine beetle activity has not been as expansive as compared to the North Fork Subbasin but still more active than endemic levels.

The following table displays by decade approximate harvest acreages within this Subbasin **(**excluding the Hungry Horse reservoir construction acreages). Documentation of harvest levels prior to the 1950s is not readily available and is not included, although it is recognized that harvest did occur prior to 1950. Harvest during this time period was generally individual tree or group selection and within the valley bottom.

Timber harvest history in the South Fork Subbasin.

Decade	Regeneration Harvest (acres)	Salvage/Intermediate Harvest (acres)	Selection Harvest (acres)
1950s	6,079	1,729	0
1960s	15,692	6,352	23
1970s	12,575	9,164	268
1980s	7,734	9,525	174
1990s	2,433	921s	0
Total	44,513	27,691	465

The following table displays the approximate acres of wildfire that have been recorded. Acreage, both within and outside the Wilderness Areas was estimated from photography or on

the ground. In most cases, the fires burned the areas in varying degrees over the landscape and reburns of previously burned areas was common. The overall trend indicates a decrease in fire in recent decades.

Sixty-four percent of the Subbasin lies within the Bob Marshall and Great Bear Wilderness Areas. Since 1981, the wilderness area has had an active prescribed natural fire plan. The following table displays the approximate acres of wildland fire and prescribed fire that occurred with natural ignition and had an approved plan for management that have been recorded. Acreage, both within and outside the wilderness was estimated from photography or on the ground. In most cases, the fires burned the areas in varying degrees over the landscape and reburns of 50 year and greater burns are common. The trend indicates a decrease in acres burned, but that is reversing since the implementation of the prescribe fire plan.

Decade	Wildland Fire	Prescribed Fire 1/
1880-1909	160,260 acres	0 acres
1910-1919	250,000 acres	0 acres
1920-1929	87,000 acres	0 acres
1930-1939	3,200 acres	0 acres
1940-1949	0 acres	0 acres
1950-1959	1,000 acres	0 acres
1960-1969	500 acres	0 acres
1970-1979	0 acres	0 acres
1980-1989	1,203 acres	6,006 acres
1990 - present	16,029 acres	1,320 acres
Total	519,192 acres	7,326 acres

1/ Prescribed fire is defined as a prescribed fire started by a natural ignition, that meets planned objectives and had a plan approved in advance of the fire start. This is dependent on relatively unpredictable lightning activity. Each individual fire start is analyzed in detail to determine the risks associated with its unique location and time of the year in relation to the approved plan.

C. MANAGEMENT PRIORITIES

In the context of the Interior Columbia Basin, the South Fork Flathead Subbasin was classified as high ecological integrity, and placed into Forest Cluster 1. Although the evidence of past management activities, including hydroelectric dam development and timber management, is apparent in the lower end of the Subbasin, the majority of the area lies within the Bob Marshall and Great Bear Wildernesses and therefore earns a high integrity rating.

Integrity Ratings for the South Fork Flathead Subbasin (from Quigley and others 1996):

Forest	Aquatic	Hydrology	Composite
High	High	High	High

Priorities for vegetation throughout the Subbasin include restoration of whitebark pine stands that have been heavily impacted by white pine blister rust, conservation and restoration of Large Single-story ponderosa pine stands, and prescribed burning on elk and deer winter ranges. Some

vegetation management activities are conducted as part of the wildlife mitigation program for Hungry Horse dam.

Bark beetle risk is currently *Very High* in portions of the Spotted Bear Geographic Unit and *High* in the Kah Geographic Unit. Risk is generally *Moderate* in the remaining Geographic Units outside the wilderness, and *Unknown* within the wilderness. Fire hazard is considered *High* in portions of the Wounded Buck, Emery, Wheeler, Kah, Spotted Bear, Black Bear, and Salmon Geographic Units. Fire hazard is generally *Low* in the Twin Creek, Bunker, and White River Geographic Units, and *Unknown* in the Danaher and Youngs Creek Geographic Units. Reducing the high risk/hazard of losses from mountain pine beetle in lodgepole dominated stands remains a priority.

Maintaining and or restoring dominance of seral species (larch, western white pine, Douglas-fir, ponderosa pine) is a priority.

The highest priorities for watershed restoration in this Subbasin are found in the Emery Geographic Unit. Drainages within the Wounded Buck, Wheeler, and Kah Geographic Units are considered *Moderate* priority for watershed restoration, with the remainder considered *Low* priority.

With the exception of Twin Creek, all Geographic Units north of Spotted Bear provide opportunities to increase habitat security for species such as elk and grizzly bear.

A primary emphasis for this Subbasin is to maintain the wilderness character of the Bob Marshall and Great Bear wildernesses. The South Fork River above Hungry Horse reservoir is designated as a Wild and Scenic River. Leave No Trace practices are emphasized for both the wilderness and river management.

D. GEOGRAPHIC UNITS WITHIN THE SOUTH FORK FLATHEAD SUBBASIN

Danaher Geographic Unit - This geographic unit lies entirely within the Bob Marshall Wilderness, and encompasses the eastern headwaters of the South Fork Flathead. A unique feature is the extensive wetland complex in the upper valley along Danaher Creek.

Ponderosa pine parks are found extensively along the river bottom. Aspen and sagebrush are also found in this geographic unit. Some lodgepole pine stands show evidence of frequent underburning. Some unique stands of limber pine can be found in the Flathead Alps.

Very limited fire activity has occurred in the unit within the last decade. This area, particularly around the Big Prairie-White River Park vicinity, provides an important winter range for small bands of elk.

Recreation uses are primarily hunting and extended wilderness trips. The Danaher meadow area has historical significance as a homestead. The residence was later abandoned, and the land reverted back to public ownership.

Youngs Creek Geographic Unit - This geographic unit lies entirely within the Bob Marshall Wilderness, and encompasses the western headwaters of the South Fork of the Flathead River.

The area is characterized by high rugged peaks with cirque basins and lakes at the high elevations, and long heavily forested drainages. Very limited fire activity has occurred in the unit within the last decade.

This geographic unit contains the primary trail access from Holland Lake and Pyramid Pass into Big Prairie. This is one of the more heavily used parts of the wilderness.

Salmon Geographic Unit - The Big Salmon and Little Salmon Rivers drain this geographic unit. This area represents an ecological break, with drier conditions and vegetation than found to the north.

High peaks, including Holland Peak, and cirque basins form with western perimeter of this geographic unit. Big Salmon Lake is known for its outstanding fishery and scenic quality. Common loons occur here during the nesting season. The unit is a stronghold for bull trout and westslope cutthroat trout.

There have been several recent prescribed fires with natural ignition in this geographic unit. Notable among these was the Charlotte Peak fire.

Black Bear Geographic Unit - This is a relatively small geographic unit, located along the South Fork of the Flathead River above Spotted Bear. Silvertip Peak is a major feature.

This geographic unit receives heavy use for fishing, and is a primary access route into the White River and to Big Prairie.

Several thousand acres have burned under the prescribed natural fire program in the past decade, primarily in the Helen Creek and Damnation Creek drainages. Non-native plant species were found in the old airstrip and at the administrative site; control actions have completed.

White River Creek Geographic Unit - This are has unique geology, with the Chinese Wall forming the eastern boundary.

Open stands of ponderosa pine are characteristic of the lower end of the drainage. Very limited fire activity has occurred in the unit within the last decade.

The area receives relatively low recreation use. White River Pass and Larch Hill Pass provide access routes to the east side.

Bunker Geographic Unit - The high country in this geographic unit is above timberline. Subalpine fir and whitebark pine predominate at the higher elevations, with western larch, Douglas-fir, lodgepole pine, and Engelmann spruce found at all elevations.

The Bunker geographic unit is considered important grizzly bear habitat. There is also a significant population of mountain goat in the north fork of Bunker Creek. The lower end of the drainage provides mule deer and elk winter range.

Recreational activities include hunting, fishing, berrypicking, firewood gathering, and hiking. The Gorge Creek trailhead is a major entry point into the Bob Marshall Wilderness.

Spotted Bear Geographic Unit - Much of this Geographic Unit is high country, with slopes that rise above timberline. In the higher elevation forested areas, subalpine fir and whitebark pine predominate. A mixture of Douglas-fir, western larch, lodgepole pine, and Engelmann spruce are found across most elevations. At lower elevations, subalpine fir occurs mainly along the bottoms of drainages. Ponderosa pine occurs at low elevations.

The area serves as a primary migration route for elk. A significant area of elk and mule deer winter range is situated in the western portion of the Unit as well. The area is heavily hunted, particularly late in the hunting season.

This Geographic Unit contains trailheads at Big Bill, Beaver Creek, and Webb Lake, which provide primary access into the Great Bear and Bob Marshall wildernesses.

Twin Creek Geographic Unit - This Geographic unit provides important winter range for elk summering in the wilderness. An active prescribed burning program has been underway in the Dry Parks and Crossover areas.

Dispersed recreation use occurs along the reservoir.

Kah Geographic Unit - The South Fork Flathead River, designated by Congress as a Wild and Scenic River, forms the eastern boundary of this Geographic Area, along with a portion of the Hungry Horse Reservoir. Dispersed recreational use occurs in various places along the river and reservoir.

The East-Side Reservoir Road also traverses along this eastern boundary, which provides one of the two access routes to the Spotted Bear Ranger Station. Meadow Creek Trailhead located at the south end of the Geographic Unit is a major access point into the Bob Marshall Wilderness for outfitted and non-outfitted visitors in July, August, September, and October.

Lodgepole pine stands are scattered throughout the area in the mid to lower elevations. In addition, larch cover types are common from the Kah Mountain area south to Cedar Creek. Suitable habitat is available for grizzly bear, gray wolf, bald eagle, and Canada lynx with the grizzly bear being the most common of these species. Bull trout and westslope cutthroat trout have maintained their historic range with exception of Addition Creek.

Wheeler Geographic Unit - This geographic unit lies to the west of the South Fork Flathead River, and encompasses Sullivan, Qunintonkon, and Wheeler Creeks. Terrain is generally steep and rocky. Forests are dominated by western larch, Douglas-fir, lodgepole pine, Engelmann spruce, and western white pine. Understory shrubs consist primarily of shrubs such as menziesia, huckleberry, mountain maple, mountain ash, alder, Pacific yew, pachistima, and elderberry. At high elevations, subalpine fir and whitebark pine predominate. Avalanche chutes area prominent feature in these drainages.

The first timber harvest in this area occurred in the mid 1960s, as a result of efforts to salvage mortality due to a spruce beetle epidemic.

Wounded Buck Geographic Unit - This geographic unit encompasses the lower South Fork drainage, west of the reservoir.

This geographic unit contains a large portion of the Jewel Basin Hiking Area. Handkerchief Lake also is an important recreation site.

Emery Geographic Unit - Firefighter Mountain is a well-known landmark within this Geographic Unit. Terrain is moderately steep to steep. Glacial erosion and deposition have sculpted the area, leaving rounded topographic forms.

Major tree species are Engelmann spruce, western white pine, and subalpine fir in the drainages, and lodgepole pine and Douglas-fir on the uplands. Western larch is mixed throughout.

There is mule deer and elk winter habitat adjacent to the reservoir. The high elevations provide high-quality grizzly bear summer and winter denning habitat.

The close proximity to towns leads to relatively heavy public use. Hiking is limited but occurs in the vicinity of Great Northern Mountain. Developed recreation sites are located at Emery Bay and Fire Island.

STILLWATER SUBBASIN

522,443 acres (all ownerships within the Subbasin)
219,875 acres (Flathead National Forest land only)

A. CHARACTERISTICS OF THE SUBBASIN

The Stillwater Subbasin encompasses roughly one half million acres of land 20 to 25 air miles south of the Canadian border. It includes the floor of the Flathead Valley north and northwest of Kalispell and all upland areas draining into the Stillwater River. About 40% of the area is National Forest land administered by the Flathead National Forest, while the far northwest portion lies within Kootenai National Forest.

The Stillwater Subbasin includes the communities of Whitefish, Olney, and Stryker. Private lands are concentrated on the main valley floor and along the Stillwater River and the valley bottoms of many of the major drainages. Private land uses include industrial forestry, small industry, farming, ranching, and private homesites on both small and large acreages. Many valley bottom areas, once mostly forested, have been cleared and developed for human use. Most of the upper Stillwater and Swift Creek drainages are in the Stillwater State Forest and are managed by Montana Department of Natural Resources and Conservation.

The area is bounded by the Whitefish Range to the northeast, the Salish Mountain divide to the west and the Ashley watershed divide to the south. To the south and southeast, the boundary follows low-lying watershed divides. The Stillwater Subbasin is characterized by rolling glaciated terrain, varying in elevation from 3,000 to over 7,000 feet above sea level. The Stillwater drainage has a distinct northwest to southeast orientation while the remainder of the area has an east/west orientation. The area is relatively moist, and, except for the main valley floor, dominated by forest vegetation.

Forested areas are dominated by moist coniferous forest, including western larch, lodgepole pine, Douglas-fir, subalpine fir, and Engelmann spruce. Large expanses of lodgepole pine are evidence of past large wildfires, which resulted in near monoculture vegetative conditions. Lower elevation forests are primarily multi-layered older forest consisting of western larch, Douglas-fir, and lodgepole pine.

Unique values and characteristic features that are especially noteworthy:

<u>Human Uses</u>

Only about 40% of the Subbasin is included within the Flathead National Forest. Ownership patterns are relatively contiguous, with most of the National Forest lands concentrated in the western half of the Subbasin at higher elevations.

While several communities are within the valley bottoms, the Subbasin has a predominantly rural character.

Areas of concentrated human use include Tally Lake, Whitefish Lake, Upper and Lower Stillwater Lake, smaller mountain lakes, Round Meadows cross-country ski and bike trails and the Big Mountain Ski and Summer Resort. Recreational visits to Big Mountain average 270,000 visitors in the winter and more than 50,000 during the other three seasons.

Many of the recreational uses within the forested portions of the Subbasin are dispersed throughout the area, including hunting and fishing, wood cutting, and berry picking.

Scenic vistas are limited by the rolling topography and the scarcity of high peaks as vantage points. Much of the area can be viewed at a distance from the top of Big Mountain.

The Subbasin contains an extensive road system, providing relatively easy access to most of the forested lands.
Miller Creek Demonstration Forest provides thirty years of research in a managed forest setting.

Terrestrial Ecosystems

Fire and insect and disease activity, combined with human use and development, have been dominant forces in shaping today's landscape in the Subbasin.
Forested uplands are highly productive and have been heavily harvested.
Lodgepole forests are a significant part of the Stillwater landscape, encompassing large areas on both private and National Forest lands.
Of Flathead National Forest lands in the Subbasin, more than 30% are dominated by lodgepole pine forest, about 30% are Douglas-fir/larch communities, and subalpine fir communities occupy about 20%.
Ponderosa pine, western redcedar/western hemlock, grand fir and whitebark pine/alpine larch communities are relatively rare in the Stillwater Subbasin.
The Subbasin supports large populations of white-tailed deer and moose and provides extensive roaded hunting opportunity. About 15% of the Subbasin is ungulate winter range.
With the possible exception of the Lower Stillwater, all of the Geographic Units in this Subbasin appear to support the full complement of wildlife species historically found in the area. This includes grizzly bear, gray wolf, and bald eagle, in addition to sensitive wildlife such as common loons and boreal owls.
Areas of old growth forest currently occur mostly as riparian stringers in the upland areas and in generally small patches on the landscape.
LeBeau Research Natural Area provides a relatively remote, unroaded refugia including unique topography, and representation of numerous unmanaged forest communities.

Aquatic Ecosystems

Glaciation has created areas where soils contain an impermeable subsurface layer, resulting in shallow subsurface flow. Small portions of the Subbasin are lacustrine in origin and have easily erodible soils.
The Stillwater and Whitefish Rivers and other larger streams in the valley floor have a deep silt substrate that influences the makeup of aquatic life.
Slow moving, highly sinuous streams in some valley bottoms are colored brown from organic stains. Their slow velocity and color leads to elevated summer water temperatures.
Extensive human activity, including urban and other residential development, timber harvest, road building, grazing, and agricultural practices, have lead to deterioration of water quality and aquatic habitats. The State Department of Environmental Quality listed the Whitefish River, Stillwater River and Logan Creeks as partially impaired for beneficial uses.
Fish occurring in Subbasin lakes and streams include native westslope cutthroat trout, mountain whitefish and bull trout as well as introduced rainbow and brook trout, grayling, northern pike, and yellow perch. In addition, several species of non-game fish including members of the sucker and minnow families are found in the lakes and streams of the area.
This is the only Subbasin in the Flathead National Forest known to support the northern bog lemming.
Human-caused disturbance and introduction of non-native fish have contributed to the decline of native fish populations.
Tally Lake is the deepest natural lake in the western United States. It is also unusual in that its major inlet and outlet are adjacent to each other.

B. STILLWATER SUBBASIN HISTORY

Fire regimes in this Subbasin include both lethal and mixed-severity fires which occur on a relatively infrequent basis (50 to 300 years plus). Fire intensity has ranged from stand-replacement fires with few survivors to low severity fires where most trees survive. Patch size is highly variable ranging from 10 acres to 28,000 acres. Much of current vegetation in the Subbasin resulted from one or more major fire events occurring in the mid 1700's, 1874, 1889, 1910, 1919, 1921, 1926, 1929 and 1994. Major fires covered 10,000 to 28,000 acres or more.

Homesteading and settlement along the Stillwater River Corridor (the Old Fort Steele Trail) began in earnest after the turn of the century. The Great Northern Railroad was built along this route, and railroad ties were needed in great abundance. The railroad was completed in 1904. The large ponderosa pine, western larch and Douglas-fir were readily available along the valley bottom. Loggers in the 1910s and 1920s skidded the logs to Good Creek and the Stillwater River, where they had built "splash dams" to flush the logs downstream to the Somers Lumber Company mill. Here they were made into ties and pressure treated. Much of this wood came from land belonging to the Glacier Park Co., a subsidiary of the Great Northern Railroad. Most of this land has changed ownership over the years to private individuals. The Forest Service tended to turn down tie sales because the larger trees would be left standing (McKay 1994). The last log drive on the Stillwater River was in 1923, according the 1957 timber management plan for the Flathead National Forest, Tally Lake District.

Mountain pine beetles are a significant disturbance agent in the Stillwater Subbasin. Historical evidence suggests that the area has been repeatedly affected by a cycle of mountain pine beetle population build-up, extensive tree mortality, and increasing amounts of dead and downed material. Typically, large-scale fires have followed, resulting in large contiguous areas dominated by lodgepole pine regeneration. The most recent mountain pine beetle infestation occurred in the early 1980s and affected most of the lodgepole pine stands across the Subbasin. In response to the widespread tree mortality, extensive roading and logging occurred in the 1970s and 1980s.

A summary of logging activity on the Flathead National Forest lands within the Subbasin follows. Regeneration harvest has occurred on 28% of the Flathead National Forest lands in the Stillwater Subbasin, with salvage or intermediate harvest occurring on an additional 10% of Forest land.

Timber harvest history on National Forest lands in the Stillwater Subbasin.

Decade	Regeneration Harvest (acres)	Salvage/Intermediate Harvest (acres)
1950s	1000	600
1960s	11,000	3,200
1970s	15,700	11,000
1980s	22,900	2,200
1990s	11,600	4,100
Total	62,200	21,100

The following table displays the approximate acres of wildland fire that have been recorded by the USFS within the subbasin. It does not include those acres that have been suppressed by local city/rural fire departments on private ownership. In most cases, the fires burned the areas in varying degrees of severity over the landscape; reburns of previously burned areas were common. In these cases, the acreages were included for each of the years that an area was burned. The overall trend indicates a decrease in the acres burned per decade following the fires of 1940, probably a result of effective fire suppression efforts. The only exception is the Little Wolf Fire in 1994 that burned approximately 10,609 acres.

Acres of wildland fire in the Stillwater Subbasin across all ownership.

Decade	Recorded Wildland Fire Acres
1889-1899	25757
1900-1909	3200
1910-1919	71996
1920-1929	61619
1930-1939	4548
1940-1949	6606
1950-1959	32
1960-1969	1003
1970-1979	140
1980-1989	277
1990-present	11051
Total	**186,229**

C. MANAGEMENT PRIORITIES

The Stillwater Subbasin was classified in the Scientific Assessment for the Interior Columbia Basin as having a low composite ecological integrity rating, and placed into Forest Cluster 4. This cluster is typified by highly roaded moist forest types. The primary opportunities include restoration of late and old forest structure; connection of aquatic strongholds; and treatment of forested areas to reduce fire, insect, and disease susceptibility.

Integrity Ratings for the Stillwater Subbasin (from Quigley and others 1996):

Forest	Aquatic	Hydrology	Composite
Low	Low	Moderate	Low

Priorities for vegetation management include restoring Large Single-story and Large Multistory stand structures in western larch, Douglas-fir and ponderosa pine cover types on warm dry and warm moist potential vegetation groups, and prescribed burning on deer and elk winter ranges. Whitebark pine restoration opportunities are found in the Subbasin at the higher elevation along the Whitefish Divide.

Bark beetle risk is currently considered *High* in portions of the Logan Geographic Unit. Risk is generally *Moderate* in the Lower Stillwater Geographic Unit, and *Low* in the remaining Geographic Units.

Risk of severe fire is highest in portions of the Logan, Good, Whitefish River and Upper Stillwater Geographic Units. It is generally considered *Low* in the lower valley bottomlands of the Whitefish River and Lower Stillwater Geographic Units.

High priority watershed restoration needs have been identified for drainages in the Logan and Good Geographic Units.

D. GEOGRAPHIC UNITS WITHIN THE STILLWATER SUBBASIN

Upper Stillwater Geographic Unit - This Geographic unit, approximately 95,000 acres in size, includes the Sunday Creek drainage on the Kootenai National Forest, a portion of the Stillwater State Forest, and private lands along the river bottom. Flathead National Forest lands comprise about 15% of the Geographic Unit; the LeBeau Research Natural Area is the central feature on these lands. LeBeau includes unique areas of broken glaciated topography, with a diversity of forest communities from cedar/hemlock to dry Douglas-fir. The area is highly valued by locals as a special and remote place on the Tally Lake Ranger District.

Highway 93, Olney, the Stillwater River, and the Stillwater Lakes are concentrated areas of human use. Both passenger and freight trains travel the areas on tracks along the valley bottom.

This geographic unit supports numerous wildlife species, including productive bald eagle nests and a gray wolf den. Wildlife habitat is particularly secure in the LeBeau area, where there are also relatively large contiguous areas of old growth habitat. The center of the unit is known for high concentrations of wintering white-tailed and mule deer.

Good Creek Geographic Unit - Good Creek Geographic unit is approximately 70,000 acres in size. The majority of the area is in National Forest lands, with more than 100 different private holdings concentrated along the riparian areas. Both year round and seasonal residents seem to appreciate the remoteness of the area. Many do not have phone or electrical service.

Nearly half of this geographic unit burned in 1910 and 1926, resulting in a large expanse of even-aged lodgepole pine with little surviving old growth. A greater proportion of older mixed-species forests is found throughout the Martin Creek drainage and the higher elevations of the Good Creek drainage where fire-return intervals are generally longer. The historic return interval for large mixed severity fires is about 80 years. Stand replacing fires occurred every 140 to 170 years, on average. The last large fires in this geographic unit were about 80 years ago. Many areas in the stand replacement regime have not had a disturbance for 250 years.

The predominant land use in the Good Creek Geographic Unit has been timber production since the late 1950s. The early sales were in response to a spruce bark beetle epidemic. Road building and salvage harvest continued into the 1980s in response to major lodgepole pine mortality from the Mountain Pine Beetle. This unit has been extensively roaded, with some form of harvest activity occurring on 35% of the National Forest lands. Miller Creek Demonstration Forest lies within this unit.

Good Creek provides habitat for numerous wildlife species. Some, such as gray wolves, grizzly bears, and wolverine, probably pass through the area in their travels; others such as deer and elk spend three seasons in the Good Creek Geographic Unit, but winter outside the area. Extraordinarily high numbers of moose winter in the Miller Creek area. Numerous creeks,

springs, ponds and wet meadows provide the focus of deer and elk habitat. Several ponds and broad streamside wetlands are found throughout the lower elevations.

Logan Creek Geographic Unit - This geographic unit, approximately 128,000 acres in size, is the center of the Tally Lake Ranger District. Logan Creek includes numerous private ranches and seasonal and year round residences concentrated in the Star Meadows area and north of Tally Lake. Private commercial timberlands are intermixed with National Forest lands on the southern edge of the geographic unit. The majority of the area is National Forest lands.

Tally Lake, covering approximately 1,300 acres, lies within this geographic unit. This deep, steep-sided lake provides a variety of recreational opportunities including camping, boating, wildlife viewing, and fishing. Sylvia Lake is a popular undeveloped recreation destination; this lake contains grayling. Other recreational uses of the area include hunting, woodcutting, stream fishing, and berry picking.

Logan Creek has a history of intensive forest management, with some form of harvest occurring on about one-third of National Forest lands. Much of the harvest and road construction has been in response to major lodgepole pine mortality from the mountain pine beetle.

In 1994, 10,609 acres of the Hand Creek and Ingalls Mountain area was impacted by the Little Wolf fire. This fire created a complex mosaic of varying degrees of severity, although the majority was stand replacement fire. Subsequent to the fire, there were high levels of mortality in the underburned areas. This was followed by rapid build up of bark beetles, affecting both spruce and Douglas-fir. Management activity in response to the fire has included salvage logging of a portion of the high-intensity burn areas, and efforts to control the spruce beetle and Douglas-fir beetle epidemics, including removal of infested trees, use of trap tree sites, and pheromone trapping. The fire area contains the noxious weed, tansy ragwort. Coordinated control efforts with the USDA Forest Service, State of Montana, Lincoln and Flathead counties, local grazing association, and others, are on-going.

Old-growth forest habitat is generally lacking in quantity and is fragmented in the Logan Creek unit, except for larger areas around Ashley Mountain and Tally Lake. Big game species are abundant, despite the lack of forested cover in some areas. High quality winter range covers much of the northeast part of this geographic unit. Logan Creek provides important year-round moose habitat. The large wildfire has provided habitat for a variety of fire-dependent species, including black-backed woodpeckers. Loons and bald eagles nest along Tally lake. Lynx are suspected to reproduce within this unit.

Fire exclusion has allowed a great deal of forest fuel to accumulation across the geographic unit. Lodgepole pine and Douglas-fir stands are at a stage where they are susceptible to infestation by bark beetles.

Whitefish River Geographic Unit - This long narrow Geographic Unit stretches from north of Stryker to south of the community of Whitefish, including approximately 142,000 acres. Portions of the Stillwater State Forest, industrial timber company lands, and private lands in the valley bottom occupy the majority of this area. The area is moist and moderately cool with isolated "rain shadow" effect areas, leading to highest snow accumulation in Flathead Valley.

National Forest lands are about 10% of the unit, concentrated at the highest elevations along the Whitefish Divide. The terrain is dominated by steep glaciated mountain slopes including the highest peaks on the Tally Lake Ranger District.

Vegetation includes whitebark pine, alpine larch, spruce, and subalpine fir, as well as some open rock slopes. Whitebark pine communities in the Whitefish Range are generally in decline due to white pine blister rust and fire exclusion.

Big Mountain Ski and Summer Resort lies within this geographic unit. The remainder of National Forest lands within this geographic unit are managed for visuals and semi-primitive non-motorized recreation. No management activity has occurred on most of the National Forest lands, although Stillwater State Forest and some private lands are managed for timber production.

This Geographic Unit supports grizzly bear denning, possible wolverine and lynx denning, and travel routes for gray wolf. Old growth habitat is focused in fairly contiguous patches of high-elevation types. Winter range for white-tailed deer lies along the major rivers to the south; winter range for elk and deer is northwest of Whitefish Lake.

Subdivision and residential development is rapidly expanding along the lower elevations.

Lower Stillwater Geographic Unit - The Lower Stillwater Geographic unit contains approximately 86,000 acres, mostly in private lands. Private lands have been extensively developed including agricultural uses, industry, subdivision, and numerous private holdings. Extensive development and agriculture within the floodplain has affected aquatic habitats. Fire exclusion has allowed fuels to accumulate in the wildland urban interface. This creates a potential hazard near private ownership, especially in the Rhodes Draw and Bootjack Lake areas.

National Forest lands are concentrated in the western edge of the Geographic Unit and account for about 25% of the total acreage. Warm dry and warm moist potential vegetation groups dominated by Douglas-fir, lodgepole pine and lesser amounts of ponderosa pine grow here. Small amounts of grand-fir and cedar may be found in this area.

This Geographic Unit provides extensive areas of winter range for white-tailed deer, mule deer, and elk, both on and off National Forest lands. Old growth habitat is fragmented except on Pilot Knob and east of Mountain Meadows.

FLATHEAD LAKE SUBBASIN

819,254 acres (all ownerships within the Subbasin)
139,536 acres (Flathead National Forest land only)

A. CHARACTERISTICS OF THE SUBBASIN

The Flathead Lake Subbasin encompasses a vast area extending from north of Hungry Horse more than 50 miles south to Polson. It is bounded on the east by the Mission and Swan Range and on the west by a low-lying watershed divide. The Subbasin is dominated by private ownership.

The communities of Kalispell, Columbia Falls, Coram, Hungry Horse, Marion, Lakeside, Rawlins and Polson are included within this Subbasin. Much of the area is agricultural and residential lands surrounding these communities. Private industrial timber lands and the Flathead Reservation dominate the southern portions of the Subbasin.

National Forest lands are less than 20% of the Subbasin, concentrated in the Island Unit west of Kalispell, in the Coram/Lake Five area, and in a fringe at the upper elevations of the Subbasin. Portions of four Ranger Districts are included in this Subbasin.

Unique values and characteristic features that are especially noteworthy:

<u>Human Uses</u>

Diverse intermingled ownership pattern including residential, farming and ranching, industrial, and forestry uses.
Highway 2 and Highway 93 provide major travelways through the Subbasin which are used by local residents as well as millions of visitors to the Flathead and to Glacier National Park.
A diversity of recreational opportunities exist within the Subbasin, especially associated with Flathead Lake, Lake Mary Ronan, Ashley Lake, Little Bitterroot Lake, and the major rivers. Recreational uses include sight-seeing, biking, hiking, boating, hunting, fishing, skiing, and snowmobiling.
A new ski area approved for development on Blacktail Mountain is expected to be operational by 1999.
Coram Experimental Forest is within the northern portion of the Subbasin.
Desert Mountain is an electronic site for valley communication.

<u>Terrestrial Ecosystems</u>

A diversity of forest communities are included in this Subbasin. One of the most significant impacts to terrestrial ecosystems has been the clearing of land in the valley bottom for human use (development and agricultural).
The southern portion of the Subbasin is made up of dryer sites including open grasslands and areas dominated by ponderosa pine and Douglas-fir.
Forested areas to the north are more moist and contain a mixture of tree species including lodgepole pine, western larch, Douglas-fir, spruce, and subalpine fir.
Nesting bald eagles and peregrine falcons, and denning gray wolves (threatened and endangered species) occupy habitat within this Subbasin. Grizzly bear interactions with rural development and attractants are becoming more frequent.
The valley floor has relatively high populations of white-tailed deer, pheasant, turkey, and black bear.

Winter range for white-tailed deer and elk occurs over about one third of the Subbasin, predominantly along the lower elevations. Residential development now occupies what was once the highest quality winter range.
Rural interface with wildland fires and risk of fire starts, human-caused or natural, is increasing.

Aquatic Ecosystems

Flathead Lake is the largest freshwater lake west of the Mississippi River and is the central feature of this Subbasin.
Construction of the Kerr Dam south of Polson in the 1950s has had a significant impact on aquatics by raising the lake level.
Key native fish include populations of adfluvial bull trout and westslope cutthroat trout that migrate into tributary streams (primarily in the North Fork and Middle Fork of the Flathead River) where spawning and rearing occur.
Several species of game fish have been introduced including kokanee salmon, lake trout, and lake whitefish which primarily inhabit the lake. In addition, northern pike and largemouth bass have been introduced, but inhabit the sloughs and backwaters of the Flathead River as it flows throughout the valley.
Introduction of non-native fish and the mysis shrimp into the lake system, along with changes in spawning habitat in tributary streams, have contributed to the decline of native fish populations in the lake.

B. FLATHEAD LAKE SUBBASIN HISTORY

The Flathead Lake Subbasin has a long history of human use. The valley has been a gathering place along travel routes for Salish and Kootenai Tribes for centuries. European settlement began with the fur traders in the early 1800s. While a few miners and explorers passed through the area in the mid 1800s, the growth of settlements was tied to the development of the Great Northern Railway in the 1890s and the Forest Homestead act of 1906. As people came to the valley, farming and ranching activities grew.

Access to the area was by trail, and then wagon route until the 1880s when the first steamboat came to Flathead Lake. At their peak in 1915, there were 20 boats operating on the lake. The first cars arrived in the valley about 1905, but driving as a means of transportation was not a reality until the 1920s and 1930s when massive road construction efforts were undertaken.

In the 1880s the Flathead Valley was largely wooded. The timber industry was active on a very small scale at that time. With the advent of the railroad, the demand for tie logs grew, as did the logging activity in the valley. Lumber was the first product exported from the valley via the railroad. Early logging was via horses and railroad with river drives transporting logs to mill sites on Flathead Lake. Ultimately much of the valley bottom was converted from forest to agricultural and ranch lands and homesites, and logging activity shifted to the higher-elevation forested areas. In the Cedar Flats area, roller thinning was applied to approximately 200 acres in the 1960s to early 1970s to reduce wildland fire risks and promote healthier forest stands.

The following table displays by decade approximate harvest acreages within this Subbasin that occurred on National Forest lands. Documentation of harvest levels prior to the 1950s is not readily available and is not included, although it is recognized that harvest did occur prior to 1950. Harvest during this time period was generally individual tree, group selection, or salvage.

Timber harvest history on National Forest lands in the Flathead Lake Subbasin.

Decade	Regeneration Harvest (acres)	Salvage/Intermediate Harvest (acres)	Selection Harvest (acres)
1950s	1,351	957	80
1960s	5,492	2,585	97
1970s	6,104	3,734	320
1980s	10,071	4,741	412
1990s	2,580	2,198	8
Total	25,598	14,215	917

Grazing began on the southern end of the Subbasin, likely in the 1880s. Both sheep and cattle grazing were extensive in the first part of the 19th century. Cattle grazing on private lands in the Blankenship area is still occurring.

The following table displays the approximate acres of wildfire that have been recorded by the USFS on the National Forest lands**,** and does not include those acres that have been suppressed by the local city/rural fire departments on private ground. Records are fairly accurate back to the 1950s. The 1929 fire burned most of the Lake Five and Cedar Teakettle Geographic Units. The evolving improvement of firefighting techniques by the local city/rural and wildland fire agencies have kept the size of wildland fires in this area to a minimum since the 1950s.

Fire history on the National Forest portions of the Subbasin.

Decade	Wildland Fire Acres
1889-1899	4,965
1900-1909	0
1910-1919	5,865
1920-1929	25,000
1930-1939	13
1940-1949	0
1950-1959	9
1960-1969	23
1970-1979	301
1980-1989	131
1990-Present	156
Total	36,463

C. MANAGEMENT PRIORITIES

In the context of the Interior Columbia Basin, the Flathead Lake Subbasin was classified as Forest Cluster 4. This indicates the Subbasin has relatively low forest integrity, low or moderate aquatic integrity, and high road densities.

Integrity Ratings for the Flathead Lake Subbasin (from Quigley and others 1996):

Forest	Aquatic	Hydrology	Composite
Low	Low	Moderate	Low

Due to the cumulative effects of past management on public and private lands, vegetation management will emphasize restoration of Large Single-story ponderosa pine stands and management of fuels in the urban/wildland interface. Substantial opportunities also exist for prescribed burning on elk and deer winter ranges. In the East Shore Geographic Unit, there is a need to thin forest understory and re-introduce fire.

Bark beetle risk is currently considered *Moderate* in the Lake Five, Ashley South, East Shore, and Lake Mary Ronan Geographic Units, and *Low* in the remaining Geographic Units. The East Shore unit has had a recent beetle epidemic.

Fire hazard is considered *High* in portions of the Cedar Teakettle, Lake Five, East Shore, and Ashley North Geographic Units. Fire hazard is generally *Low* in the remaining Geographic Units.

High priority watershed restoration needs have been identified in drainages within all Geographic Units in this Subbasin.

D. GEOGRAPHIC UNITS WITHIN THE FLATHEAD LAKE SUBBASIN

Lake Five Geographic Unit - This geographic unit generally encompasses the confluence of the North, Middle, and South Forks of the Flathead River.

Noisy Face Geographic Unit - The unit is about 126,600 acres in total, of which 25,500 acres (20%) are managed by the Forest Service. The crest of the Swan Range to the east and State of Montana and private lands to the west border the unit. Part of the Jewel Basin Hiking Area is in the Noisy Face unit.

The terrain is moderate to steep. Rock outcrops, cliffs, and avalanche chutes characterize the upper elevations. The lower elevations are very productive sites, in terms of their ability to grow trees.

Engelmann spruce, larch, Douglas-fir, and grand fir and the predominant tree species. Western hemlock, whitebark pine, and lodgepole pine are minor components. Stands of old growth hemlock of the type found in Krause basin are relatively rare on the Forest.

Portions of the unit are inhabited by grizzly bear and there have been sightings of gray wolves. Some lower slopes provide winter range for mule deer and elk.

Some streams contain cutthroat trout, some have no fish, and none of the streams contain bull trout. Many of the lakes were once stocked with non-native fish.

The unit is a very important visual resource on the Forest. The Noisy Face unit can be viewed from a large part of the Flathead Valley. There are steep, sharp ridges and high degrees of patterns in vegetation. At higher elevations, snow-capped peaks are prominent throughout much of the year.

Hunting, berry-picking, hiking, fishing, cross-country skiing, motorcycle riding, and snowmobiling are common forms of recreation in the unit. There are several popular trails in the unit, including the Alpine Trail #7, which extends along the crest of the Swan Range.

Portions of the lower elevations in the unit have been logged, most notably in the 1960s when a severe windstorm led to salvage logging of blown-down timber. Most of the roads were built at lower elevations to accommodate the timber harvesting.

East Shore Geographic Unit - The East Shore geographic unit is a narrow strip of land that runs from the shores of Flathead Lake up to the ridge of Crane Mountain. An isolated parcel of National Forest land adjoins Flathead Lake, which is the point of lowest elevation on the Flathead National Forest. The southern boundary of the unit borders the Flathead Indian Reservation. Private lands, including numerous cherry orchards, form the western boundary.

Surface water from the East Shore unit drains into Flathead Lake. Many of the streams flow only during spring runoff and streams on Forest Service land to not contain fish. A number of local landowners use water from the unit for irrigation and domestic water supply.

The terrain is gentle at the top and bottom of the unit, and steep in the middle. Rocky terrain and shallow soils characterize the northern part, where the 646-acre East Shore Research Natural Area is located; it was designated as a natural area to provide an example of the Douglas-fir/common snowberry habitat type.

Subalpine fir and Engelmann spruce are common at higher elevations. Larch, Douglas-fir, and lodgepole pine are found at all elevations. Ponderosa pine and grand fir are also found throughout the unit at lower elevations. Historically, forests across the lower portions of this unit burned frequently. Open-grown stands of large ponderosa pine and western larch with little understory were common. Today, some of the old trees remain, including pine over 300 years of age, but ladder fuels have built up during this century and threaten their existence. Much of the upper third of the unit has been logged. Most of the lower two-thirds of the area has not been logged.

The “urban interface” is particularly important along this unit. A fire history study that was recently completed indicates that the area has shifted from a low intensity, frequent fire pattern in a non-lethal fire regime to a mixed or lethal fire regime. The unit has a large amount of fuel buildup, mainly due to effective fire suppression this century, and as a result, is experiencing increasing amounts of insect and disease outbreaks. There have been numerous new homes built in the area of private land between the lake and National Forest land. Fires starting along private lands could burn up and over the ridge of Crane Mountain, or fires starting within the unit could spill over onto private lands.

There are several hiking trails in the East Shore unit, including a trailhead at Beardance on highway 35. Other uses of the unit by people include: hunting, firewood gathering, berry-picking, and snowmobiling. The upper portions of the unit have access by roads. The lower portions generally do not, due to private ownership along the western edge of the unit.

The unit has important visual significance. Unobstructed views of the area are provided from the lower Flathead Valley and the west shore of Flathead Lake.

Polson Geographic Unit - The majority of the Geographic Unit is within the Flathead Indian Reservation. No Flathead National Forest lands are included. This area contains the driest sites within the Subbasin, supporting ponderosa pine and Douglas-fir as well as open grass or sagebrush hillsides.

Flathead Lake is in the center of the geographic unit, as is the community of Polson. While residences are scattered throughout the area, the town and lake-side area form the hub of human activity. The Mission Mountain Tribal Wilderness is included within the area.

Ashley North Geographic Unit - This 115,000 acre Geographic Unit lies directly west of Kalispell and is dominated by gentle rolling terrain. Most of the unit is private land, including forested areas, open ranchlands, and many private residences. Less than 10% of the area is Flathead National Forest lands, mostly in isolated sections intermixed with private commercial timberlands.

The forests are dominated by mixed-species conifers, with numerous creeks and patches of wet meadows bordered by spruce, and rocky uplands with large Douglas-fir. There has been a considerable amount of harvest on all ownerships, often highly-visible straight line edges. Much of the old growth habitat was fragmented, leaving few patches over 100 acres in size. This area contains some stands of warm/dry old growth ponderosa pine with extensive ingrowth of Douglas-fir.

Big game is abundant, despite the lack of forested cover in some areas. High quality winter range covers about a quarter of the unit, mostly below 4,200 feet. MDFWP has frequently transplanted elk to the unit from the National Bison Range. Grizzly bears are still occasionally seen in the unit, including sows with cubs.

Ashley Lake (over 3,000 acres) is near the center of the unit. Loons, grebes, and relatively high numbers of waterfowl nest along this lake, as well as smaller lakes in the unit. The bald eagle nest at Ashley Lake is noted for low productivity and frequent nest failures. Sport game fisheries include kokanee salmon and state-record hybrid cutthroat/rainbow trout. Westslope cutthroat and, possibly, bull trout occur in this lake. The most important fish spawning tributaries on the Tally Lake Ranger District include Fish and Wade Creeks. In 1992, water quality concerns drove the decision to delay harvest on Flathead National Forest lands.

Much of the shoreline has been developed for recreation residences and an increasing number of year-round homes. Activities include ice fishing, hunting, fishing, berry picking, firewood gathering, and hiking.

Ashley South Geographic Unit - The total size of the Ashley South unit is 119,700 acres, of which the Forest Service manages 28,800 acres (24%). Plum Creek Timber Company owns a large portion of the remaining acreage and it manages its lands for long-term timber production. There is also a large portion of small private landowners within this unit.

The southwest facing slopes of this unit are warm, dry habitats supporting Douglas-fir and ponderosa pine. Other aspects are cool, moist and support Douglas-fir and western larch. Upper elevations are cold and moist and support sub-alpine fir, Engelmann spruce, and lodgepole pine.

There are no bull trout in the streams of this unit. Several streams have cutthroat trout at very high elevation, but downstream areas are largely occupied by exotic brook trout.

There are many roads and there has been extensive timber harvesting in this unit. There are some opportunities for watershed restoration.

Blacktail Mountain is located within the Ashley South Geographic Unit. There is a developed downhill ski area located at the top of Blacktail Mountain, expected to be in operation for the 1998-1999 ski season. There are about 30 special use electronic sites located at the top of the mountain.

There are many roads and there has been extensive timber harvesting in this unit. Primary recreation uses include snowmobile and motorbike riding, driving for pleasure, skiing, biking, and hunting.

Lake Mary Ronan Geographic Unit - The total area of the Lake Mary Ronan unit is roughly 100,000 acres, of which the Forest Service manages 18,600 acres (19%). Plum Creek Timber Company owns a large portion of the remaining acreage, which it manages for long-term timber production. There is a large portion of small private landowners within this unit.

Overall, the unit is relatively dry. Southwest facing slopes of this unit are warm and dry, supporting Douglas-fir and ponderosa pine. Other aspects are cool and moist and support Douglas-fir and western larch. Upper elevations are cold and moist and support sub-alpine fir, Engelmann spruce, and lodgepole pine.

Lake Mary Ronan is a very popular fishery. The streams in this unit have few fish in them.

There are many roads and there has been extensive timber harvesting in this unit. Primary recreation uses include snowmobile and motorbike riding, driving for pleasure, skiing, biking, and hunting. There is a cross-country ski trail system and an ATV trail and parking lot located within the geographic unit. Water from Stoner and Truman Creeks is used for domestic purposes.

Little Bitterroot Geographic Unit - This Geographic Unit of approximately 65,000 acres actually falls within the Lower Flathead Subbasin, but because of the very minor acreage of Flathead National Forest land, we have included it here. Ownership patterns within the geographic unit are a checkerboard of corporate timber lands and private holdings, many containing residences. Highway 2 bisects the unit. Little Bitterroot Lake, with a surface area of more than 3,000 acres, lies along the northern edge of this unit.

The Lower Flathead Subbasin was placed into Forest Cluster 6, which is described as mixed-integrity dry and moist forests with low aquatic integrity. The emphasis for this cluster is restoration to the extent that opportunities exist on the limited amount of federal land, containment of weed expansion, and conservation of fish strongholds.

The 200-acre Little Bitterroot Research Natural area lies within this geographic unit. This RNA was designated in recognition of the presence of good examples of all four phases of the Douglas-fir/pinegrass habitat type.

V. Implementation

INTRODUCTION

Implementation of the Flathead National Forest Plan requires moving from an existing land-use management program, with a budget and "targets" for accomplishment, to a new management program with a budget, goals, and objectives that provide a different way of addressing the issues and concerns people have voiced about Forest management. This document and its appendices provide the direction for management of the Flathead National Forest for the next 10 years when used in conjunction with Forest Service Manuals, Forest Service Handbooks, and the Northern Regional Guide.

This chapter on implementation explains how management of the Flathead National Forest moves from "Current Direction" and the existing situation (see Chapter VI) to the Preferred Alternative displayed in the EIS. The first section focuses on aspects of implementation that are influenced by previous management activities and objectives. The second section describes the relationship between project planning and activities and this Forest Plan. The third section addresses monitoring and evaluation. Plan revision and amendment are covered in the last section.

INFLUENCE OF PAST MANAGEMENT ON FUTURE OPTIONS

As discussed and displayed in Chapters III (Management Area Direction) and IV (Geographic Units), the management direction for specific areas of the Forest is defined by this Plan. In some instances, this is a change from current management. Where no previous management activities have occurred, these areas can be brought under management from a neutral point; however, in areas where management activities have occurred to meet objectives other than those now specified by this Plan, some period of adjustment may be required to bring management fully into line with this Plan.

For example, in some of the visually sensitive portions of the Forest, timber harvest activities have modified the landscape. Under this Forest Plan, future management activities will be required to produce and maintain a landscape where management meets retention or partial retention visual quality objectives, thus protecting the visual landscape from a modified appearance. Viewshed analysis will be done for these areas prior to implementation of any more management activities. This analysis will specify if any additional modification of the landscape is necessary in the short term to correct the existing situation and meet the long-term retention or partial retention visual quality objectives.

In addition to specifying management direction for areas of the Forest, this Plan schedules management activities. Previous management activities influence the scheduling of future activities. Results from past experience and research were considered in the Forest planning process. For example, uneven-aged management using individual tree selection was used as the primary silvicultural system in the 1940's and early 1950's. Extensive use of uneven-aged silviculture was found to be ecologically unsound in Northern Rocky Mountain Forests where fire plays a dominant role. All-age stand structures suitable for application of uneven-aged systems are seldom found in Northern Rocky Mountain Forests.

Attempts to create all-aged stand structures from even-aged stands over time results in loss of shade intolerant species such as pine and western larch that cannot reproduce in shade. Buildup of ground fuel quantities and in vertical and horizontal fuel continuity because of uneven-aged management inevitably

predisposes the stands to fire. Multistoried stands composed of shade tolerant species are also predisposed to natural insect and disease pathogens such as spruce budworm and root rots. Insect and disease problems are compounded by damage to the residual stand and to soils from frequent logging entries that are necessary to implement uneven-aged systems.

Frequent logging entries are also disturbing to important Flathead National Forest wildlife species such as grizzly bear, gray wolf, and elk.

The Forest determined from research literature and professional experience that uneven-aged silviculture is ecologically unsound for extensive application in the even-aged stands of the Flathead National Forest due to the problems described above. It was concluded that it was inappropriate to develop a Forest Plan alternative featuring uneven-aged management. These facts were considered early in the Forest planning process and incorporated into vegetative management guidelines for Habitat Type Groups (see Appendix I). These guidelines were used as minimum management requirements for the formulation of alternatives. Uneven-aged silviculture is appropriate for relatively small local areas when nontimber values are high such as in riparian areas. FORPLAN analysis data following alternative development further confirmed that selection systems are not cost-effective timber harvest methods on the Flathead National Forest.

The transition from the timber volume objective of the past to the timber objective of this Forest Plan merits explanation.

Historically, the majority of timber management activities have occurred on the less than 40 percent slopes in the suitable timber base. These more gentle slopes constitute less than half (46 percent) of the total tentatively suitable timber lands.*

This Forest Plan schedules timber management in steeper, as yet undeveloped areas to avoid unacceptable impacts to other resources on the gentler slopes. This shift in the location of timber management activities has several significant implications. First the terrain and resource protection constraints associated with the steeper ground require the use of logging systems that historically have not been common in the Flathead National Forest. This Forest Plan requires a gradual shift toward more long-line cable logging systems. These systems are expensive to purchase and costly to use. They require a continuing program of timber sales to support their use. This plan will provide that continuing program, and Flathead National Forest management personnel will work with industry to implement the use of these logging systems and this program of timber management.

Sale layout on steeper slopes will be more difficult and costly to do than experienced in the past.

Site preparation on slopes over 40 percent will require broadcast burning or other nonmechanized methods, such as herbicides. This Forest Plan may require as much as a 500 percent increase in acres broadcast burned over what was burned in 1981. Experience, weather, manpower, and cost factors indicate that accomplishment of site preparation in a timely manner will be very difficult. Innovative methods of getting the task accomplished will be required. Additional training of fire personnel and use of contracts, burning teams, and fuel specialists may be required. Due to low slash volumes, short burning periods and brushy habitat types, the utilization of herbicides, including aerial application, may

* About 27 percent of the potentially suitable lands have 40-60 percent slopes, and 27 percent exceed 60 percent slope.

be required to accomplish site preparation objectives. Herbicides will be used only if the requirements of the Forest-wide guidelines can be met.

Reforestation on these steeper slopes will also be more difficult and costly to accomplish.

Implementation of this Forest Plan will mean there will be some individual timber sales that will have a negative cash flow when all costs (including transportation system development) are considered in relation to timber revenues from the timber harvest. These sales are referred to as "below-cost timber sales." The Forest Plan analyses of these sales are necessary to achieve both short-term and long-term benefits necessary to maximize net public benefits.

There are several reasons why these timber sales are necessary, and they are usually interrelated. The construction of roads for access to unroaded stands requires a heavy initial investment that may exceed the value of current standing timber, but returns from future timber harvests will amortize the costs and return a net benefit. The reasons existing timber may not recover costs often involve the geographic distribution of merchantable timber (e.g., the road may have to pass through immature timber with little current value to get to economically mature stands or current stands that are defective with low commercial value). Usually there are constraints involved with protection or enhancement of nontimber resources that do not permit exploitation of all the economic potential of existing stands in order to produce a positive cash flow on the initial entry. Examples of these constraints include design of harvest patterns to produce desired patterns of wildlife forage and cover, visual landscapes, soil and water protection, or fire fuels management.

Cost-efficient management emphasis for the Flathead National Forest requires that cash flow analysis must be a consideration in the economic analysis and development of project design in order to minimize negative cash flow projects (see Project Planning below). Forest Plan analysis data indicates "below-cost sales" cannot be eliminated entirely and still achieves projected short-term and long-term outputs.

Chapter II shows management objectives. Some of these objectives differ from those to which Flathead National Forest management has been responsive prior to implementation of this Plan.

Appendix M displays the 10-year scheduled timber sale offerings for the Flathead National Forest. As is more thoroughly explained in the introduction to that appendix, this schedule of sale offerings is designed to achieve the average annual harvest level of 100 MMBF of the Proposed Action (1000 MMBF per decade). This Forest Plan schedules a specific number of acres to be harvested (66,000 acres of regeneration harvest and 25,000 acres of intermediate harvest), resulting in a given timber harvest volume.*

Monitoring will focus on validating the following assumptions: (1) that the schedule of sale offerings will achieve the harvest acres specified in Chapter III; (2) that the harvest of those acres will result in 1000 MMBF over the decade; and (3) that the harvest of those acres and that volume results in the predicted environmental effects.

Implementation and monitoring of this timber management program are complicated by the continuing impacts of previous management activities. There are over 450 MMBF of timber volume sold but

* In the past, procedures scheduled a certain volume first, resulting in the number of acres to be treated.

unharvested on the Flathead National Forest. This volume probably will be harvested over the next 2 or 3 years. The environmental effects of this harvesting activity will be different than if harvest had occurred in a steady pattern over time. In addition, harvest of these acres will result in a large amount of site preparation and reforestation needs that are to be accomplished during the period covered by this Forest Plan. Monitoring of the continuing implementation of previous management activities will require evaluation and, if necessary, adjustment of this Forest Plan.

PROJECT PLANNING

The Forest Plan serves as the single land management plan for the Flathead National Forest. All other land management plans have been replaced by the direction provided herein.

Similarly, this Forest Plan directs the management of all resources on the Flathead National Forest. All previous resource management plans are replaced by this document. Resource management objectives are displayed in Chapter II, and schedules of resource management practices for each Management Area are displayed in Chapter III. Schedules of management activities for the next 10 years are presented in Appendix M.

Several documents designed to give further guidance to management activities have been developed "under the umbrella of" this Forest Plan. They are:

- The Wilderness Fire Plan for the Bob Marshall Wilderness Complex
- Long-Range Mule Deer and Elk Winter Range Activity Schedule
- Long-Range Whitetailed Deer Winter Range Activity Schedule
- Long-Range Grizzly Bear Habitat Activity Schedule
- Area Transportation Document
- Landownership Adjustment Schedule

A. MANAGEMENT GUIDELINES

As mentioned in Chapter II, the management standards of this Plan supplement National and Regional guidelines provided through Forest Service Manuals and Handbooks and the Northern Regional Guide. Guidance is also provided by the appendices.

B. PROJECT PLANNING AND ACTIVITIES

The management direction provided by this Forest Plan comprises the sideboards within which project planning and activities take place. It defines Management Area goals and management standards that guide project activities toward achieving a desired future condition for the management area and, collectively, for the Forest. It specifies a schedule for project activities (management practices). It provides guidance concerning potential landtype and habitat type constraints, including assumptions about the appropriate vegetation management practices for timber sale projects. On-the-ground project analysis validates or invalidates the appropriateness of those assumptions.

Within this guidance, the project is developed to most efficiently and effectively accomplish the management goals and objectives and to comply with all NEPA requirements. This Plan attempts to

resolve resource management conflicts by identifying the priority resource management goals for each Management Area (see Chapter III). For example, in Management Area 13, priority is given to management activities which improve mule deer and elk winter habitat; however, priority is not given to a single resource to the exclusion of other resources. All resources will be protected and managed to be consistent with the management goals of the area; thus, in Management Area 13, as long as it is compatible with and protects the winter range, timber can be harvested, water quality protected, recreation provided, and visual quality maintained. Project planning should recognize the significant other resource values in an area and the fullest extent possible while compatible with the management goals and projected costs.

The environmental analyses conducted for project activities, such as a timber sale, will be documented in a project file. The file will include the relevant guidance provided by the Forest Plan and the additional analysis developed by the project interdisciplinary team.

As part of project planning, site specific water quality effects will be evaluated and control measures designed to ensure that the project will meet Forest water quality goals; projects that will not meet State water quality standards will be redesigned, rescheduled, or dropped.

Economic analysis is required for all land disturbing projects over $25,000 in cost or value. The analysis will be appropriate to the scale and timing of the project and documented in the project file. It may be tiered to a previous analysis or it may be a comparison to a similar project. Examples are follow-up treatments such as overstory removal and salvage timber sales. The intent is to ensure that costs and benefits are examined, and that each project is considered in relation to other alternatives using accepted methods of economic analysis. Methods of economic analysis are described in FSH 1909.17, as well as in FSM 2431.22a (timber sale economic analysis) and FSM 7712.42 (transportation planning economic analysis). The economic analysis should be used to aid in decision making, thus leading to improved resource management decisions. It is not a decision making tool in itself. An economic analysis should include identification and consideration of the following points:

- Formulate and identify an alternative with cost efficiency as the primary consideration in meeting the objectives, along with other alternatives.
- For each alternative, identify which costs are considered mitigation costs. These are costs necessary to prevent loss of some value due to implementation of the project.
- For each alternative, identify which costs are enhancement costs. These costs could possibly be implemented as an independent project, but is considered as a part of a multiple-use project for cost efficiency.
- In addition to analysis of market priced benefits and experienced costs, nonpriced resource benefits and indirect economic benefits should be identified and documented for each cost category.

Project environmental analyses provide an essential source of information for Forest Plan monitoring. First, as project analyses are completed, new or emerging public issues or management concerns may be identified. Second, the management direction designed to facilitate achievement of the management area goals are validated by the project analyses. Third, the site specific data collected for project environmental analyses serve as a check on the correctness of the land designation. All of the information included in the project "environmental analyses" is used in the monitoring process to determine when changes should be made in the Forest Plan.

C. PROJECTS AND MONITORING

Project environmental analysis provide an essential source of information for Forest Plan monitoring. First, as project analyses are completed, new or emerging public issues or management concerns may be identified. Second, the management direction designed to facilitate achievement of the Management Area goals are validated by the project analyses. Third, the site specific data collected for project environmental analysis serve as a check on the correctness of the land designation, Management Area goals, and Forest-wide management objectives. At the project level, the projections and assumptions made in the Forest Plan are evaluated. All of this information, documented in the project file, is used in the monitoring process to determine when changes should be made in the Forest Plan.

MONITORING AND EVALUATION

Monitoring and evaluation comprises the management control system for the Forest Plan. It will provide the decision maker, and the public, information on the progress and results of implementing the Forest Plan.

Monitoring and evaluation entails comparing the end results being achieved to those projected in the Plan. Costs, outputs, and environmental effects, both experienced and projected, will be considered.

To do this, a comparison will be made, on a sample basis, of overall progress in implementing the Plan as well as whether the overall relationships on which the Plan is based have changed over time. When changes occur, they will be evaluated as to their significance, and appropriate amendments or revisions made.

The goals for monitoring and evaluating this Forest Plan are to determine:

- if the Forest is achieving the goals and objectives of the Plan;
- if standards and guidelines are being followed;
- whether management standards and guidelines are achieving the desired future conditions for each Management Area;
- if a number of assumptions, estimates, or hypotheses relating to resource effects, yields, values, and costs developed during this planning process are valid by testing and refining than;
- if the dollar and manpower costs of implementing the Forest Plan are as predicted;
- if individual management prescriptions are responding to existing and emerging public issues and concerns;
- if management practices on adjacent or intermingled non-National Forest System lands are affecting the realization of Forest Plan goals and objectives;
- if implementation of the Plan is affecting other agencies in reaching their objectives;
- if research is needed to support the management of the Forest beyond that identified in Chapter II of the Forest Plan; and
- for the responsible official and the public when there is a need to change management direction, or to revise or amend the Forest Plan.

Table V-1 displays the basic outline of the monitoring process. The monitoring and evaluation system is designed to indicate if programs are meeting Plan objectives and to identify where amendment or revision is warranted. The Acceptable Variability and Trends column defines the ranges or limits an activity can have. If outside the acceptable range, further evaluation will be necessary. A frequency for measuring the monitored item is also established.

The monitoring process consists of a variety of sampling methods, ranging from simple review of plans or reports to use of sophisticated data collection instruments in accordance with statistically valid sampling design. Many of these monitoring items are ongoing activities.

TABLE V-1 - MONITORING REQUIREMENTS

Item No.	Resource Unit of Measure	MIH Code	Evaluation Objectives for Outputs, Issues, & Management Concerns	Actions/Effects or Resources to be Measured	Data Source	Accuracy *	Monitor Frequency	Report Period**	Comments on Variability and Trends
1	Recreation MRVD	A01	To evaluate motorized & nonmotorized recreation use levels by ROS class & recreation activities to determine if a full range of quality recreation opportunity experiences are being achieved.	Actual use of developed & dispersed recreation by ROS class compare with projected use. User satisfaction & trends. Effects of ORV use.	RIM Report & field observation, camera counters, user sampling	2	Annual	5 years	Indicators of significant variation from expected use.
1a				Sample trails to determine amount of use and whether motorized use occurs.					
2	Recreation Properties, Sites, & Acres	A02 A03 A04	To evaluate selected cultural resource sites to determine if protection measures are sufficient to prevent deterioration. To determine if the Antiquity Acts are being followed during project planning & implementation.	Cultural resource protection. Determine protection compliance during project activity. Compliance to insure acts are being followed.	Cultural inventories & 36 CFR 800. On-the-ground observation. Review resource project plans.	2	Annual	5 years	Destruction of known sites is unacceptable. Follow guidelines outlined in CFR 800.
3	Recreation PAOT Days	A07	To evaluate site & area facilities to determine if full-service level management is being achieved.	Improvement of sites & facilities to achieve full-service level.	RIM, field observation, cleaning & policing standards, travel plan.	2	Annual	5 years	At least 90% PAOT days at FSL at end of 5-year period.

* Accuracy, precision, reliability: Classification based on following scale:
1. Statistically based sampling methods
2. Nonstatistical methods based on observation, comparisons, sampling of indicators, or estimates from field personnel

** Interim reports may be provided on an annual basis if warranted.

Item No.	Resource Unit of Measure	MIH Code	Evaluation Objectives for Outputs, Issues, & Management Concerns	Actions/Effects or Resources to be Measured	Data Source	Accuracy *	Monitor Frequency	Report Period**	Comments on Variability and Trends
4	Recreation # of projects & acres affected	A14	To determine progress in achieving adopted VQO's.	Monitoring the effects of land resource activities in visual resource & cost of implementing various VQO's.	FPM, project EA, Visual Mgt System, field observation	2	Annual	5 years	A ±10% deviation in acres from prescribed VQO.
5	Recreation Miles	A10 A11	Provide adequate miles of trails to meet visitor needs.	Miles of trails constructed or reconstructed.	Project plans & inventories	2	Annual	5 years	A ±15% deviation from the decade objective of 50 miles is acceptable.
6	Recreation Acres	A02	Rate of change of roadless lands on the Forest.	Measure change in status.	Project plans, EA, Transportation Plans	2	5 years	5 years	A loss of more than 15,000 acres by 1990 requires analysis and review of this trend.
7	Wilderness PAOT Days	B03	To maintain a high level of wilderness recreation experience.	Trail conditions, visitor encounters, range conditions, campsite impacts	Limits of Acceptable Change Indicators & Standards process (draft until FSM Supp), BM Wilderness Mgt Standards & Guidelines, visitor contacts, field observations & inspections	2	Annual	Annual	Exceeds Limits of Acceptable Change criteria.

Item No.	Resource Unit of Measure	MIH Code	Evaluation Objectives for Outputs, Issues, & Management Concerns	Actions/Effects or Resources to be Measured	Data Source	Accuracy *	Monitor Frequency	Report Period**	Comments on Variability and Trends
8	Wildlife #of White-tailed Deer	C01	Change in whitetailed deer population status.	Whitetailed deer population	MDFWP hunter questionnaires & check station data	2	Annual	5 years	Indicators point to significant change in population due to land management practices.
9	Wildlife Percent	C01	Change in whitetailed deer habitat status.	Percent of potential whitetailed deer winter habitat having acceptable forage/ cover ratios	Winter habitat transects	2	Annually 20%	5 years	Indicators point to significant change in population due to land management practices.
10	Wildlife # of Elk/Mule Deer	C01	Change in elk/mule deer population status.	Elk and Mule Deer Population	MDFWP hunter questionnaires & check station data.	2	Annual	5 years	Indicators point to significant change in population due to land management practices.
11	Wildlife Percent	C01	Change in elk/mule deer habitat status.	Percent of potential elk/mule deer winter habitat having acceptable forage/ cover ratios	Winter habitat transects	2	Annually 20%	5 years	Indicators point to significant change in population due to land management practices.
12	Wildlife Pounds/acre of palatable forage and use	C01	Change in elk/mule deer status.	Browse production and use	Winter habitat transects	2	Annually 20%	5 years	Indicators point to adverse changes in browse production and are due to land management practices.

Item No.	Resource Unit of Measure	MIH Code	Evaluation Objectives for Outputs, Issues, & Management Concerns	Actions/Effects or Resources to be Measured	Data Source	Accuracy *	Monitor Frequency	Report Period**	Comments on Variability and Trends
13	Wildlife Percent change of mapped critical elk summer habitat	C01	Change in elk/mule deer status.	Change in critical elk summer habitats	Summer habitat inventory & MT Elk-Logging Guidelines	2	Annually 20%	5 years	Indicators point to adverse changes in habitat due to land management practices.
14	Wildlife # of Moose & Mountain Goat	C01	Change in moose & mountain goat population status.	Moose/Mountain Goat Population	MDFWP hunter questionnaire	2	Annual	5 years	Indicators point to change in population trends due to land management practices.
15	Wildlife Percent change in acres of suitable old growth	C01	Change in status of old growth.	Occupancy of old growth forests by old growth-associated wildlife species	Presence/absence surveys	2	Annual 5%	5 years	Indicators point to significant change in population due to land management practices.
16a	Wildlife Grizzly bear population	C01	Change in population status.	Number of females with cubs, occupancy of BMUs by family groups, and known human-caused mortality.	Research, field observations	2	Annual	5 years	Criteria and methods consistent with Recovery Plan monitoring.
16b	Wildlife Percent change in grizzly bear habitat	C01	Change in habitat status.	Seasonal habitat values and habitat effectiveness index values, by BMU subunit	NCDE cumulative effects model	1	5 year	5 years	Indicators point to significant change in habitat due to land management practices.

Item No.	Resource Unit of Measure	MIH Code	Evaluation Objectives for Outputs, Issues, & Management Concerns	Actions/Effects or Resources to be Measured	Data Source	Accuracy *	Monitor Frequency	Report Period**	Comments on Variability and Trends
17	Wildlife Biological evaluations	C01	To report compliance with the Endangered Species Act	Number of biological evaluations conducted, determinations of effects by species, and concurrences or Biological Opinions received from the US Fish and Wildlife Service.	Project records	2	Annual	Annual	Track compliance.
18	Wildlife Gray wolf population	C01	Change in population status.	Number of packs, productivity, and known human-caused mortality.	Research, field observations	2	Annual	5 years	Indicators point to change in population trend.
19	Wildlife Forest birds	C01	Change in population status.	Bird distribution, productivity and survivorship	Point count surveys, MAPS stations	1	Annual	5 years	Criteria and methods consistent with R1 Landbird Monitoring program.
20a	Wildlife # of pelts	C01	Change in population status.	Furbearer population and harvest levels.	MDFWP Furbearer Report	2	Annual	5 years	Indicators point to change in population trends.
20b	Wildlife Distribution of forest carnivores	C01	Change in population status.	Spatial distribution across the forest	Winter snow track surveys	2	Annual	5 years	Indicators point to change in distribution.
21	Wildlife Number of sensitive species plans	C01	To prevent a loss of population viability.	Completion of species management plans	Sensitive species management plans or conservation strategies	2	5 years	5 years	Progress in preparing and adjusting land management practices.

Item No.	Resource Unit of Measure	MIH Code	Evaluation Objectives for Outputs, Issues, & Management Concerns	Actions/Effects or Resources to be Measured	Data Source	Accuracy *	Monitor Frequency	Report Period**	Comments on Variability and Trends
22a	Wildlife # of bald eagle nesting territories and annual productivity	C01	Change in indicator species status.	Bald eagle population	Nest surveys	2	Annual	5 years	Indicators point to change in population trends due to land manage-ment practices.
22b	Wildlife Acres of potential habitat available for bald eagle nesting	C01	Change in indicator species status.	Availability of potential bald eagle nesting habitat	Bald eagle nesting model	2	Annually 20%	5 years	Indicators point to changes in habitat trends due to land management practices.
23	Wildlife Bald eagle & peregrine falcon nest mgt plans	C01	Prepare management plans to ensure protection of occupied habitat.	Track completion of Nest Management Plans for bald eagle and peregrine falcon	Completed Nest Management Plans	2	5 years	5 years	Track progress.
24	Wildlife # of peregrine falcon nesting territories and annual productivity	C01	Change in indicator species status.	Peregrine falcon population	Surveys of nesting habitat	2	Annual	5 years	Indicators point to significant change in population due to land management practices.
25	Wildlife Acres	C01	Changes in habitat improvement acres.	Wildlife habitat improved	Annual wildlife report	2	Annual	5 years	Indicators point to changes in habitat trends.
26	Fish Acres	C01	Changes in fish habitat.	Fish habitat improved	Attainment Reports	2	Annual	5 years	Indicators point to lack of fish habitat improvement
27	Fish Percent change in sediments in stream substratum	C01	Changes in size & population of west slope cutthroat & bull trout as indicator species.	Changes in fish habitat: sediment in substratum, pool information, thermal and instream cover	Attainment Reports, MDFWP Reports, stream habitat surveys channel stability	1 & 2	Annually 20%	5 years	Indicators point to changes in population trends.

Item No.	Resource Unit of Measure	MIH Code	Evaluation Objectives for Outputs, Issues, & Management Concerns	Actions/Effects or Resources to be Measured	Data Source	Accuracy *	Monitor Frequency	Report Period**	Comments on Variability and Trends
28	Fish Change in WCT & Bull Trout Redds	C01	Changes in size & population of west slope cutthroat & bull trout as indicator species.	Indicator species WCT/bull trout. Fish population greater than 6". Redd counts.	MDFWP Reports, Fish population models	1	Annually 20%	5 years	Downward changes in redd count as a result of land manage-ment practices.
29	Fish Changes in water temperature	C01	Changes in size & population of west slope cutthroat & bull trout as indicator species.	Indicator species WCT/bull trout.	Instream measurements	1	Annual	As part of WQ Report	Temperatures are above threshold acceptable to moderator fish species.
30	Range AUM's	D02	Determine if projections in Forest Plan are accurate	Measure livestock forage use	Grazing Statistical Report	2	Annual	5 years	±25% of AUM, offered as projected in Plan.
30a	Range Noxious weed inventory	D02	Determine the extent and kind of weed infestations (selected weeds).	Develop biological, vegetative, mechanical, and chemical control systems	District field reports	2	Annual	Annual	Increase or decrease in extent of weeds.
31	Timber MMBF	E00	To validate that timber outputs concur with those planned, *both area and volume*.	Total Offered Volume	Quarterly Timber Sale Accomplishme nt Report	1	Annual	Annual	±10% within the Plan projections.
32	Timber MMBF	E00	To validate that timber outputs concur with those planned, *both area and volume.*	Total Sell Volume	Quarterly Cut & sold Report	1	Annual	Annual	±10% within the Plan projections.
33	Timber MMBF	E00	To validate that timber outputs concur with those planned, *both area and volume.*	Total Cut Volume	Sale Reports	1	Annual	Annual	±10% within the Plan projections.
34	Timber Acres & MBF	E00	To validate that timber outputs concur with those planned, *both area and volume.*	Regeneration Harvest	Timber Stand Data Base	1	Annual	Annual	±10% within the Plan projections.
35	Timber Acres & MBF	E00	To validate that timber outputs concur with those planned, *both area and volume.*	Intermediate Harvest	Timber Stand Data Base	1	Annual	Annual	±10% within the Plan projections.
36	Timber	E00	Determine if LPP type	Lodgepole pine	Timber Stand	1	Annual	Annual	±10% within the

Item No.	Resource Unit of Measure	MIH Code	Evaluation Objectives for Outputs, Issues, & Management Concerns	Actions/Effects or Resources to be Measured	Data Source	Accuracy *	Monitor Frequency	Report Period**	Comments on Variability and Trends
	Acres		harvest is being accomplished.	timber type harvest	Data Base				Plan projections.
37	Timber Acres	E00	Determine if projected timber harvest of stands on slopes 40%+ is being accomplished.	Area sold on slopes 40%+	Timber Stand Data Base	1	Annual	Annual	±10% of projected acres.
38	Timber Cu Ft/Acre	E00	To validate timber yield projections	Growth trends as related to Plan yield data	Permanent growth plots	1	10 years	10 years	±10% of projected growth.
39	Timber Acres	E04	To assure that cutover areas are being regenerated within prescribed time limits & standards.	Regeneration certified as completed	Timber Stand Data Base	1	Annual	Annual	±10% of planned accomplishment .
40	Timber Acres	E05	To validate stocking control projection indicated in the Plan.	Timber Stand Improvement stocking control	Timber Stand Data Base	1	Annual	5 years	±10% of projected acres.
41	Timber Acres	E04	To assure that cutover areas are being regenerated within prescribed time limits & standards	Site preparation on slopes exceeding 40%	Timber Stand Data Base	1	Annual	5 years	±10% of planned accomplishment .
42	Timber MMBF	E00	Assure that local timber industry has 2-3 years of timber supply under contract.	Relationship of Volume-under-contract to 10-year average cut volume	Forest Cut & Sold Records	1	Annual	Annual	200 to 300 MMBF under contract.
43	Timber Acres	E00	Review lands identified as not suitable for timber production.	Changes in timber land suitability	Timber Stand Data Base, Forest Data Base, field surveys	1	10 years	10 years	10% change in timber land suitability.
44	Timber Acres	E00	Evaluate size of harvest units to determine if size limits should continue.	Size of harvest areas	Timber Sale EA's	1	5 years	5 years	Reevaluate size of harvest units if current size is adversely affecting Forest goals.

Item No.	Resource Unit of Measure	MIH Code	Evaluation Objectives for Outputs, Issues, & Management Concerns	Actions/Effects or Resources to be Measured	Data Source	Accuracy *	Monitor Frequency	Report Period**	Comments on Variability and Trends
45	Water Variable	F09	Evaluate change in water quality.	Sediment, chemical, & microbiological components	Water tests with flow measurements	1	32 sites 15-20/yr	Annual	Within State and Federal water quality standards.
46	Water Acre Feet	F09	Evaluate change in water yield.	Water yield change from timber harvest	Recording stream gauge	1	Continu-ous. 4 sites	Annual	Peaks within 10% of control.
47	Water Tons/Acre Disturbed	F09	Validation of sediment yield assumptions used in the Plan.	Sediment yield	Suspended sediment samples, channel bottom materials	1	Annual	Annual	±20% of predicted yield.
48	Minerals Acres where surface resource mgt & minerals mgt objectives conflict	G06	Review effects of mineral activities on NF land management emphasis & direction & effects of surface resource management on mineral activities.	Review of FS projects that may have an adverse effect on mineral operations & effects of mineral operations on NF surface mgmt.	Review EA's & Operating Plans for all proposed minerals projects	2	Continuous, with annual summary	5 years	Surface & subsurface resource outputs should not be reduced by more than 1% due to conflicts generated by the other.
49	Lands # of acres acquired	J13	Are NF mgt objectives & mgt efficiency being impeded by lack of a viable landownership adjustment program.	Land Exchange Accomplishment	Case files	2	Annual	5 years	Annual accomplishment must be within 10% of land adjustment targets.
50	Lands # of acres acquired	J15	Are NF mgt objectives & mgt efficiency being impeded by lack of a viable landownership adjustment program.	Land Purchase & Donation	Case files	2	Annual	5 years	Annual accomplishment must be within 10% of land adjustment targets.
51	Soils Acres	F09	Monitor soil compaction & displacement resulting from Forest management activities.	Measure soil compaction in timber sale & site preparation preparation projects.	Sample bulk density	1	Annual First 5 yrs & Year 10	5 years	5% loss in productivity on affected areas.
52	Soils	F09	Monitor soil compaction	Soil displacement &	Sample bulk	1	Annual	5 years	5% loss in

Item No.	Resource Unit of Measure	MIH Code	Evaluation Objectives for Outputs, Issues, & Management Concerns	Actions/Effects or Resources to be Measured	Data Source	Accuracy *	Monitor Frequency	Report Period**	Comments on Variability and Trends
	Acres		& displacement resulting from Forest management activities.	accelerated erosion in project areas.	density & soil depth transects		First 5 yrs & Year 10		productivity.
53	Facilities 1. Miles 2. Mi/sq mi 3. MBF/mi 4. Acres/mi	L01	Compare total miles & densities of roads & resources accessed & harvested to those projected in the Forest plan. Verify Forest Plan road density coefficients.	System Inventory Transportation Planning: 1. Miles of Road 2. Road density	TIS, Transportation Plans, Transportation Maps	1	Annual	5 years	Additional miles may vary considerably by year but show stable trend for first decade.
54	Facilities 1. Miles 2. Mi/sq mi	L19	Compare open miles of roads & densities to those projected. Compare with elk population & hunting objectives & with grizzly bear habitat objectives.	Road management: 1. Miles of road open 2. Progress toward 5- and 10-year objectives for core area, total motor-ized access, and open motorized access consistent with unbound Appendix UU. 3. Effectiveness of restrictions on motorized use of roads consistent with unbound Appendix UU.	District records Road Mgt Eng. Wildlife species Travel Plan	1	Semi-annual, Summer & Fall	2001 & 2006	Within guidelines established in Forest Plan. Provide an annual report documenting progress towards 5 and 10-year objectives by BMU Subunit to the U.S. Fish and Wildlife Service.
55	Facilities $/mi $/MBF MBF/mile	L02 to L18	Keep construction/ reconstruction costs in line with resources accessed & traffic service requirements.	Road costs: construction & reconstruction resources accessed	Engineering records, timber sales, transportation plans, resource mgt records	1	Annual	Annual	Road costs should vary by landtype & logging system but be within ±25% of projec-tions. Forest wide trend should be stable thru 1st decade.
56	Facilities $/mi	L19	Compare road maintenance activities	Maintenance costs by: Function,	Road Maintenance	1	Annual	Annual	Maintenance costs should

Item No.	Resource Unit of Measure	MIH Code	Evaluation Objectives for Outputs, Issues, & Management Concerns	Actions/Effects or Resources to be Measured	Data Source	Accuracy *	Monitor Frequency	Report Period**	Comments on Variability and Trends
	$/MBF		& funding with projections in the Forest Plan.	Service Level, Maintenance level	Records, District Records				vary by functional class & maintenance levels. Trend should show increased funding as miles increase.
57	Facilities Miles	A12	To evaluate the trail system & the associated facilities to determine maintenance needs due to changes in demands & trends.	Maintenance of the existing trail system	Trail Inventory & Maintenance criteria	1	Annual	Annual	1. A loss of less than 2% of usable trail miles is accept-able. 2. A 10% or less increase in trail deteriora-tion is accept-able.
58	Protection Acres	P08 P09 P11 P12	To insure that: 1. Treatment of activity fuels is accomplished as scheduled 2. Accomplishment can be done within established air quality guidelines. 3. Treatment of natural fuels occurs within fire management areas.	Prescribed fire acreage. Wildfire acres burned annually & projected as average annual. Unplanned ignition prescribed fire acreage. Annual FFP, FFF, & NVC costs.	TSMRS, plus Accomplishme nt & Fire Reports	1	Annual	Annual	Less than 90% accomplishment of scheduled fuel treatment in 5 years, less than 75% accomplishment per year is unacceptable.
59	Protection Acres & Board Foot Volume Loss	P34	To insure management direction for the Forest Plan is adequate to deal with insect & disease problems.	Field verification of new insect & diseases & spread of existing infestations	Regional Office ground & aerial surveys	2	Annual	Annual	20% increase in rate of spread & volume loss compared to predictions.
60	Economics $	T01	Actual forest revenue.	1. Total forest revenues. 2. Returns to Treasury. 3. 25% Fund contributions.	Forest records	1	Annual	5 years	±50% variance of previous year.
61	Economics	T01	Actual costs vs.	Cost of producing	1. PMARS	1	Annual	5 years	±10% variance

Item No.	Resource Unit of Measure	MIH Code	Evaluation Objectives for Outputs, Issues, & Management Concerns	Actions/Effects or Resources to be Measured	Data Source	Accuracy *	Monitor Frequency	Report Period**	Comments on Variability and Trends
	$ per unit of output		projected budget estimates for achieving identified targets.	outputs	2. MARS 3. Forest Plan data base				of projected costs/unit of key indicator outputs. (Adjusted by volume of outputs)
62	Budget Changes in Annual Budget by Function	T01	Cumulative effect of annual budget on: a) Forest's ability to achieve projected resource management levels. b) Present Net Value (PNV) of Forest resources.	Deviation in funding levels	1. Budget allocation 2. Forest plan 3. RPA	1	Annual	Annual	Variably by resource.
63	Planning Number of issues & concerns	T01	Responsiveness of Forest Plan to existing & emerging issues & concerns.	Public comments on agency activities	Letters, appeals, petitions, newspapers	2	Semi-Annual	Annual	As needed.
64	Rare Plants Water howellia		Local population trend.	Occurrences of water howellia	Pond surveys	1	Annual	5 years	
65	Rare Plants Water howellia		Population distribution & status.	Survey suitable but unoccupied habitat	Pond surveys	2	Annual	5 years	
66	Rare Plants Water howellia		Trend of potential competitor *P. arundinacea* populations.	Survey to determine spread of the species	Pond surveys	1	Annual	5 years	
67	Rare Plants Water howellia		Determine if there are impacts from grazing	Monitor water howellia occurrences within grazing alotments	Pond surveys within active grazing allotments	1	Annual	5 years	
68	Vegetation Landscape pattern		Comparison of existing conditions to estimated range of natural variability	Composition, structure, and pattern by Subbasin		1	Annual	5 years	

Item No.	Resource Unit of Measure	MIH Code	Evaluation Objectives for Outputs, Issues, & Management Concerns	Actions/Effects or Resources to be Measured	Data Source	Accuracy *	Monitor Frequency	Report Period**	Comments on Variability and Trends
69	Vegetation Old growth forest by Subbasin and watershed		Comparison of existing conditions to estimated range of natural variability	Proportion of forest vegetation in old growth condition and patch sizes		1	Annual	5 years	
70	Vegetation Retention of live trees, snags, and coarse woody debris			Retention within timber harvest areas		1	Annual	5 years	
71	Vegetation Restoration efforts		Comparison with forest plan estimates	Implementation and effectiveness of restoration efforts		2	Annual	5 years	

An annual monitoring program, developed in accordance with this monitoring outline (Table V-1), will be prepared as part of the Forest's annual work program. This program will include the details displaying amount and location of monitoring to be accomplished. A detailed program for water quality and fish habitat monitoring (1986-1995) was prepared in April 1985. This program is part of the Forest planning records. Similar detailed monitoring programs will be prepared for all resources and activities requiring monitoring. These programs will be based on funds currently available for monitoring. If monitoring funds are inadequate to properly monitor the Plan goals and objectives, an analysis will be made to develop a course of action that should be implemented. This may include Plan amendment, Plan revision, or dropping projects.

The results and trends of monitoring described in the annual monitoring report will be evaluated and reported to the responsible official. An evaluation report will be prepared at least every 5 years. Interim evaluation reports will be prepared as necessary.

The documented file of the Forest Supervisor's decisions resulting from monitoring and review is maintained for future use in amending or revising the Forest Plan. The evaluation report, as required by 36 CFR 219.12(k), will be prepared and submitted to the Regional Forester on a regular basis.

Evaluation of data gathered during monitoring will be guided by the Decision Flow Diagram detailed in Figure V-1. As indicated in the diagram, the results of this evaluation lead to decisions on further action of the following types:

- continuing the management practice;
- referring the problem to the appropriate line officer for improvement of the application of the management practice;
- modifying the management practice as a Plan amendment;
- modifying the land management prescription as a Plan amendment;
- revising the schedule of outputs;
- revising the cost/unit output; or
- initiating revision of the Plan.

The document resulting from the use of the Decision Flow Diagram constitutes the evaluation report. As applicable, the following will be included in each evaluation report:

- A quantitative estimate of performance comparing outputs and services with those projected by the Forest Plan;
- Documentation of measured effects, including any change in productivity of the land;
- Unit costs associated with carrying out the planned activities as compared with unit costs estimated during Forest Plan development;
- Recommendations for changes;
- A list of needs for continuing evaluation of management systems and for alternative methods of management;
- A list of additional research needed to support the management of the Forest; and
- Identification of additional monitoring needs to facilitate achievement of the monitoring goals.

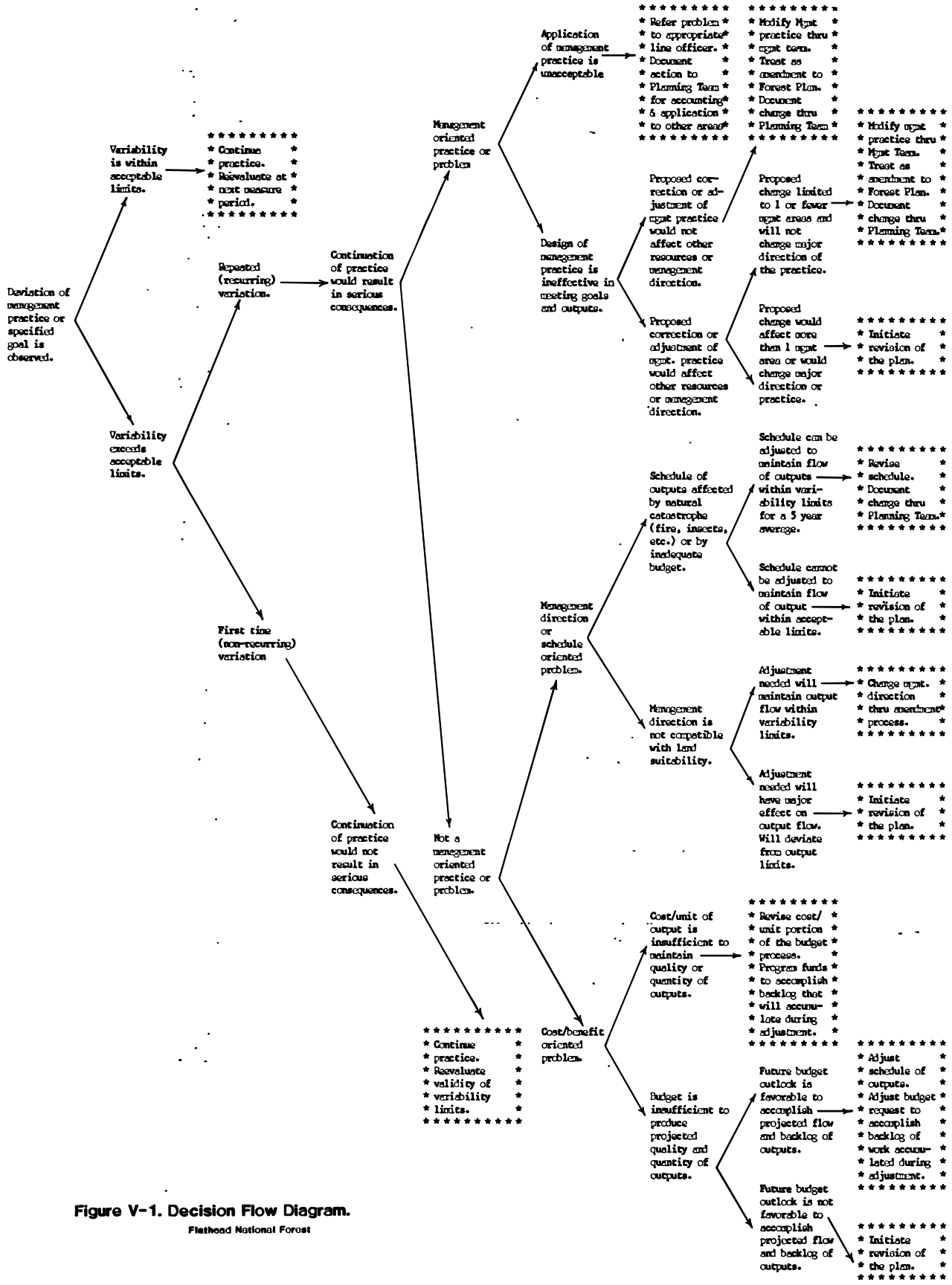


Figure V-1. Decision Flow Diagram.

Flathead National Forest

AMENDMENT AND REVISION

Generally, revisions of the Forest Plan entail minor refinements that are based on project level environmental analyses and the monitoring and evaluation plan. Revisions may include modification of Management Area boundaries to more accurately represent management intent. Revisions may also include alteration of the management direction and Forest guidelines to better facilitate achievement of Management Area goals and Forest-wide goals and objectives. Revisions do not necessarily require amendment to or revision of the EIS if the intent of the Proposed Action and the associated environmental consequences do not change.

The Forest Supervisor may amend the Forest Plan. Based on an analysis of the objectives, standards, and other contents of the Forest Plan, the Forest Supervisor shall determine whether a proposed amendment would result in a significant change in the Plan. If the change resulting from the proposed amendment is determined to be significant, the Forest Supervisor shall follow the same procedure as that required for development and approval of a Forest Plan. If the change resulting from the amendment is determined not to be significant for the purposes of the planning process, the Forest Supervisor may implement the amendment following appropriate public notification and satisfactory completion of NEPA procedures.

A Forest Plan shall ordinarily be revised on a 10-year cycle or at least every 15 years. It also may be revised whenever the Forest Supervisor determines that conditions or demands in the area covered by the Plan have changed significantly or when changes in RPA policies, goals, or objectives would have a significant effect on Forest level programs. In the monitoring and evaluation process, the interdisciplinary team may recommend a revision of the Forest Plan at any time. Revisions are not effective until considered and approved in accordance with the requirements for the development and approval of the Forest Plan. The Forest Supervisor shall review the conditions on the land covered by the Plan at least every 5 years to determine whether conditions or demands of the public have changed significantly.

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VI. Summary of the Analysis of the Management Situation

INTRODUCTION

The NFMA (National Forest Management Act) regulations require an AMS (Analysis of the Manaqement Situation) be made to determine the ability of the Forest to supply goods and services to meet society's demands. This analysis provides the information necessary for making decisions to change management direction. This information also guides the direction and extent of those changes.

The analysis considered four factors:

-- Availability of resources under the existing management situation.

-- Potential of the Forest to produce each resource.

-- Projected levels of use or public "demand" for Forest resources and opportunities to develop or use Forest resources.

-- Resource supply potential under the Forest Plan.

The availability of resources under the existing situation reflects historic and current management objectives and funding levels. These are not always congruent with the management direction established in Unit Plans and District Multiple-Use Plans.

The potential of the Forest to produce each resource is determined either using a computer analysis called FORPLAN or using best professional judgment and available data. Analyses were conducted to establish the supply potentials for timber, range, big-game winter forage, and wilderness using the computer model. Analyses conducted without the computer established the production potential for grizzly bear habitat and the supply potential for recreation. These maximum potentials are called "benchmarks."

The maximum potential for all resources cannot be met simultaneously because of the and competitive relationship among resources.

Another maximum production benchmark was developed, using the FORPLAN model, that the mix of resource uses and schedule of resource outputs and costs that would result if economic efficiency were the primary management objective. This benchmark shows what the production capabilities of the Forest would be if PNV (present net value) were maximized.*

Also, a minimum production level benchmark was developed using FORPLAN, to indicate resource production levels and management costs that would result if the Forest were managed with a minimum budget sufficient only to maintain basic soil productivity, water quality, and existing investments.

The need to develop or use Forest resources were identified in the public issues and management concerns. In addition, the need to consider changes in management direction from estimates of future

* See Glossary for definitions

use of certain resources. Opportunities to change management are displayed in the analyses which define production potentials.

Supply potential of the Forest Plan is based on the resource managment objectives and land use designations associated with the management philosophy. An evaluation of the Forest's potential for meeting the recommended RPA program is included.

The following discussion is oriented toward those resources that were the focus of an issue or concern. This chapter does not document tha analysis of the management situation process but does display the information used as a basis for the management direction specified in this Forest Plan. Existing supply, projected "demand," the current management situation, and the Forest Plan are compared.

RESOURCES

A. RECREATION

1. **DEVELOPED RECREATION** on the Flathead National Forest includes both private and public facilities. Sixty-seven summer homesites and six resorts, including the Big Mountain Winter Sports Area, provided about 118,850 RVD's (recreation visitor days) in 1980, with the majority of that use occurring at the Big Mountain facility. Use of private summer homes and resorts, excluding Big Mountain, is about 15 percent of what these areas could provide if used to capacity.

   Public developed sites include 28 campgrounds and picnic areas. Additional developed site facilities include boat ramps, swimming areas, and trailhead facilities. Actual use of public sites in 1980 was 170,500 RVD's. This level of use is about 65 percent of optimum, indicating use that is relatively high but generally not in excess of capacity. Use at public developed sites varies widely between Districts and between sites; thus, some sites may be used at or in excess of capacity while others are infrequently utilized.

   All but two of the public campgrounds and picnic areas are currently operating at a reduced service level and, in some cases, limited funding has resulted in maintenance that does not meet reduced service level standards. At some of the more heavily used sites, current facility maintenance does not always keep up with normal wear and tear, resulting in site and facility damage.

   Developed site recreation visitor day capacity provided by existing public and private facilities (1,031,000 RVD's) exceeds the Forest's RPA objectives through the year 2030. Assuming that the Flathead National Forest will continue to provide the same proportion of developed recreation use as it did in 1980, that the land base will remain constant, and that increases in developed recreation will be proportionate to population increases in the Forest's zone of influence, developed recreation demand or use will increase 30 percent from 1980 to 1990 (see Table VI-1). Much of this increase in participation at developed sites relates to downhill skiing. A significant increase in use of public campgrounds and picnic areas is indicated, probably exceeding the existing capacity in 50 years, however, no new capacity will be needed in Decade one.

Table VI-1 Recreation Potential, Existing Use, Projected Demand, and RPA Objectives (Average Annual RVD'S) - Flathead National Forest

	Maximum Production Benchmark (Capacity)	1980 Actual Use**	Projected Levels of Use***		RPA Objectives	
			Year	RVD's	Year	RVD's
Developed Recreation (RVDs)	1,031,000	289,400*	(1985)	329,000	(1980)	320,304
			(1995)	402,700	(1990)	343,190
			(2005)	493,700	(2000)	327,790
			(2015)	601,300	(2010)	337,560
			(2025)	731,500	(2020)	354,470
Dispersed Recreation (RVDs)		500,500	(1985)	568,100	(1980)	597,333
			(1995)	757,000	(1990)	647,000
			(2005)	989,800	(2000)	702,000
			(2015)	1,226,500	(2010)	745,000
			(2025)	1,600,500	(2020)	773,900
Wilderness Recreation	468,000	137,000	(1985)	204,800		
			(1995)	315,000		
			(2005)	451,000		
			(2015)	612,700		
			(2025)	807,700		

* Corrected RIM (recreation information management) data, reflecting change in the RVD's reported for The Big Mountain Ski Winter Sports Area.

** Actual use data is drawn from RIM - an inventory system with data collection problems that make the information available for the Forest inexact; however, this is the best available information.

*** Projections for the Flathead National Forest were developed by the Northern Regional Office specifically for use in Forest planning. The simple linear regression model is based on population trends in western Montana and past reported recreation use on the Forest. As with any set of projections, these are more valid in the short run as opposed to the long term.

Under this Forest Plan, the existing capacity of public developed sites would be maintained. No additional facilities are scheduled for construction. The maintenance of public sites would improve over the existing situation as all campgrounds and picnic grounds would be maintained at the full-service level to provide the visitor with a pleasant recreation experience.

The Big Mountain Winter Sports Area has reached the level of expansion allowed for in the 1975 Big Mountain Ski Resort Area Master Plan. This Forest Plan allows Big Mountain to expand its existing site and capacity as outlined in the 1984 Master Plan.

2. **DISPERSED RECREATION** is considered to be that occurring either in the unroaded Forest environment or throughout the roaded Forest. Of the Forest's approximately 500,500 RVD's of use in dispersed areas, about 77 percent occurred in a roaded environment (including activities such as berrypicking, snowmobiling, fishing, hunting, driving for

pleasure, and roadside camping) while 23 percent occurred in an unroaded environment (backpacking, hiking, fishing, hunting, and so on). Use is unevenly distributed across the Ranger Districts.

Dispersed recreation opportunities in the existing unroaded environment are not being fully realized. Limited funding has led to deteriorated and inadequate trailhead facilities, including trail signing, and a low level of trail maintenance. In a 1980 survey of the trail system based on the Northern Region's accessibility criteria, only 43 percent of the trail system was adequate. Thus while 386,000 acres are managed to provide unroaded recreation opportunities, actual opportunities are low. In addition, existing management direction does not always assure that roadless acres with high recreation values are managed as such.

Assuming that the Forest will continue to provide almost the same proportion of roaded and roadless dispersed recreation opportunities that it did in 1980 and that the land base will remain the same, projected dispersed recreation use, displayed in Table VI-1, will almost double the 1980 situation by the turn of the century.

RPA objectives for dispersed recreation opportunities on Flathead National Forest appear to be conservative given existing projected use. By the year 2030, the Forest is expected to provide the capacity to absorb 774,000 RVD's for both roaded and roadless dispersed recreation use while projected use exceeds that level by 1995.

The dispersed recreation opportunities provided under this Forest Plan would exceed those currently offered, be adequate to meet projected levels of use and exceed the RPA objectives.

About 264,000 RVD's of the total recreation capacity would be provided on 296,000 roadless acres. Land designations had to be made now to maintain sufficient roadless acres to provide capacity near the projected levels of use in the fifth decade, thus short-term needs are exceeded. Increased funding levels prescribed by this Plan would allow for improved trail maintenance, trailhead facilities, and visitor information services. The recreation capacity of the unroaded environment would be increased, provild be increased, providing more high quality recreation opportunities on fewer acres. The majority of the roadless acres are nonproductive lands where no timber harvest would be scheduled, whatever the management direction for the area. This Plan provides the opportunity to shift some backcountry use from the wildernesses, where use rapidly approaches capacity, to other roaded recreation opportunities (totaling 1,335,000 RVD's) would occur in conjunction with other Forest management activities. Capacity is somewhat constrained by the road management program.

Specially designated recreation areas contribute substantial recreation opportunities. These areas on the Flathead are:

a. The Flathead Wild and Scenic River System

The three forks of the Flathead River classified under the Wild and Scenic River Act consist of two "Wild" segments, three "Recreational" segments, and one "Scenic" segment, totaling 219 miles of classified river. Total use of the designated portions of the Flathead River has increased 77 percent from classification in 1978 to 1980. Currently 10 river outfitters operate on the river

under special-use permits.

Management of the Flathead Wild and Scenic River was developed in conjunction with Glacier National Park and management responsibilities are shared with the Park. Existing management is directed toward mitigation of resource damage on a priority basis as funding permits. Revised management direction was given public review in 1984 and those public comments are currently being analyzed.

A higher funding level for the Flathead Wild and Scenic River would mean high levels of visitor contact and education, reducing litter, trespass, and conflict between private landowners and recreationists; and funding for interagency coordination, data gathering, resource monitoring, and river management planning.

b. Jewel Basin Hiking Area

Jewel Basin was classified by the Regional Forester as a Special Roadless Area in 1970. The 15,368 acres have been managed to provide roadless backcountry hiking opportunities. Motorized use and horse travel have been prohibited. Hiking use in Jewel Basin has increased 500 percent from 1970 to 1980 in spite of relatively poor access from the west side which is closest to area population centers. Funding for management of the areas has been low, resulting in limited trail maintenance, adverse site impacts, and violations of restrictions on motorized and horse use.

Under this Forest Plan, the current 15,368 acre Jewel Basin plus an additional 16,415 acres are being recommended for wilderness classification. If Jewel Basin is not classified as wilderness, the Forest plans, during decade 1, to review current management direction and the current boundaries.

B. VISUAL QUALITY

The scenic environment throughout the Flathead National Forest is diverse. Much of the Forest maintains a natural or near natural appearance. Only a relatively small percentage of the Forest shows signs of modification by people. The majority of the modifications that do occur are due to activities associated with timber management.

The wildernesses, which comprise 46 percent of the Forest, are managed with objectives that preserve their visual quality. Similarly, the Jewel Basin Hiking Area and the "Wild" segments of the Flathead Wild and Scenic River have preservation visual quality management objectives.

In addition, 40 percent of the nonwilderness Forest is considered to be visually sensitive. That is, 519,358 acres of the Forest are frequently viewed by Forest visitors and area residents who expect and desire a landscape where man's activities are not dominant. In these areas the visual quality objectives are retention (where man's activities are not visible) or partial retention (where man's activities do not dominate the landscape). A
significant proportion of these acres are steep (slopes greater than 40 percent), have poor ability to absorb man's activities without visually evidencing change, and have not been impacted by timber management activities.

Current Direction for areas with Unit Plans specified management that is responsive to recommended visual quality objectives. In other areas of the Forest managed under the older District multiple-use plans, the recommended objectives are not met by existing direction. In some of these are critical viewing areas, the visual quality has been degraded, and others would be over time under Current Direction.

This Forest Plan provides land designations that retain 75 percent of the potential visual quality objectives. On all critical viewing areas, visual quality objectives would be either retention or partial retention.

C. WILDERNESS

The Flathead National Forest administers all of the Mission Mountains and Great Bear Wildernesses and about 70 percent of the Bob Marshall Wilderness. These areas comprise about 5 percent of the National Wilderness Preservation System in the lower 48 States and about 46 percent of the Forest's land base.

The Mission Mountains Wilderness is located on the east side of the Mission Mountain Range. On the west side is The Confederated Salish and Kootenai Tribal Wilderness, recently designated for preservation. The majority of recreationists in the Mission Mountains are drawn from the Forest's zone of influence. About 97 percent of the use is on foot, and the length of stay averages 1.7 calendar days. Heavy recreational traffic in two drainages where lakes are only a short hike in from the road have necessitated area closures to forestall further resource damage. Although portions of the wilderness are heavily used, other areas are rarely visited. Recreation use has been stable for several years, with about 15,000 RVD's of use per year.

The Bob Marshall and Great Bear Wildernesses are considered part of a contiguous wilderness complex that includes these two areas managed by the Flathead National Forest, as well as the remainder of the Bob Marshall managed by the Lewis and Clark National Forest and the Scapegoat Wilderness managed by the Helena and Lolo National Forests. The Bob Marshall complex is the second largest contiguous Wilderness in the continental United States, and the Flathead Forest manages 65 percent of it, 286,700 acres as the Great Bear Wilderness, and 709,356 acres of the Bob Marshall Wilderness.

In contrast to the Mission Mountains, the Great Bear and Bob Marshall attract more out-of-state visitors, particularly in the fall during hunting season when use is heavy. Length of stay averages nearly 5 calendar days in the Great Bear and about 5.7 calendar days in the Bob Marshall. Horseback traffic accounts for about half of the use of these areas. The Great Bear currently receives less recreational use, but visitor days have been increasing to 23,000 RVD's in 1980. The Bob Marshall receives very heavy traffic along the South Fork corridor and through Holland Pass, but use in other portions of the wilderness is comparatively light. Total recreation visitor days in 1980 in the Flathead National Forest portion of the Bob Marshall were 94,000. The concentrated use in the Bob Marshall has led to resource degradation in certain areas as evidenced by overgrazing and worn trails.

About 50 outfitters operate in the Flathead National Forest portion of the Bob Marshall and in the Great Bear and Mission Mountains Wildernesses. At this time, the number of special-use permits for outfitters is held constant pending completion of the Forest Plan and wilderness

carrying capacity studies. This carrying capacity study, known as LAC (limit of acceptable change) is currently being reviewed by the public and will likely result in some wilderness management changes in Decade 1.

The three wildernesses provided 137,000 RVD's of use in 1980. Wilderness use on the Flathead National Forest is predicted to double by 1995 and quadruple by 2025. Based on these assumptions, demand for wilderness recreation will exceed the capacity of the wildernesses by the year 2000 (see Table VI-1). The level of use is projected to exceed the maximum potential of the Flathead National Forest to provide for wilderness recreation.

Under the Forest Plan, higher levels of funding would allow for mitigation of existing resource degradation. Recreational use of the wildernesses would be highlighted in addition to preservation of the wilderness resource. Increased funding would permit accommodation of increased use assuming that trails would be maintained so use can be dispersed, visitor information and education is improved so user impacts are reduced, and special-use permits are strictly administered to minimize potentially adverse impacts. This Forest Plan proposes to add 98,080 acres to the National Wilderness Preservation System. Still, capacity of the wildernesses will be exceeded by the year 2000.

D. ROADLESS

Most Flathead National Forest roadless areas are areas of the Forest that have never been developed because it has not been economically or socially desirable to do so.

Seventeen roadless areas were inventoried and evaluated in RARE II and were designated for nonwilderness uses in the 1979 Final Environmental Impact Statement. Since 1979 nonwilderness activities such as timber harvest and roading have occurred in some of the areas resulting in a reduction in the amount of roadless land. Roadless areas evaluated for wilderness prior to RARE II in a "Unit Plan" also called for nonwilderness management.

The Forest presently has approximately 495,400 acres of inventoried roadless lands that qualify for inclusion into the National Wilderness Preservation System. They provide the potential for meeting some of the National, Regional, and Forest wilderness need because of the opportunity for solitude, primitive recreation, natural intergrity, and outstanding scenery and appearance.

As mentioned above under Wilderness, this Forest Plan proposes to add 98,080 acres to the National Wilderness Preservation System. These acres come from the inventoried roadless lands on the Forest. The following tabulation displays the proposed acres by their common roadless area locations (all are from the Bear-Marshall-Scapegoat-Swan roadless area).

Middle Fork Flathead River	6,295 Acres
East Side South Fork Flathead River	5,187 Acres
Swan Crest	31,783 Acres
Swan Front	54,815 Acres

The remaining inventoried roadless lands will be managed under this Forest Plan with the following management emphases:

Lands Managed as Roadless	188,054 Acres
Lands Managed with Minimal Investment	2,150 Acres
Lands Managed for Wildlife	88,411 Acres
Lands Suitable for Timber Management Where Timber Harvest will be Scheduled	118,735 Acres

E. WILDLIFE AND FISH

The Flathead National Forest provides habitat for approximately 250 species of wildlife and 22 species of fish. National Forest management of wildlife and fish populations is oriented toward protection and improvement of fish andwildlife habitat.

1. FISH

There are approximately 3,400 miles of streams on the Forest, about half of which support fish populations. About 600 miles of these streams with viable fish populations are located in wildernesses, with 1,100 miles of stream fisheries occurring throughout the remainder of the Forest. The streams generally have low-to-moderate levels of productivity. Sixteen streams on the Forest are closed to fishing because of their high quality spawning and nursery habitat. Twelve of these streams provide critical spawning and rearing habitat for bull trout and cutthroat trout and are essential to maintenance of these sport fisheries in Flathead Lake. In addition, four streams in the Swan River drainage are closed to fishing because of their importance as spawning and rearing habitat for migratory bull trout from Swan Lake. Four streams on the Forest contain essentially pure populations of westslope cutthroat trout.

Based on fish population counts and productivity modeling using habitat parameters, the Forest's waters are estimated to support about 1,500,000 trout and 350,000 whitefish.

Most trout populations in the lakes and rivers of the Flathead River drainage are dependent on tributary streams for spawning and rearing. Flathead National Forest streams support about 53 percent of the Flathead River System's migratory fishery and are essential to maintaining sport fisheries throughout the Flathead River System.

In 1980 the Forest received about 89,000 recreation visitor days of fishing use. Fishing use generally is expected to increase commensurate with increases in recreational activities. Based on recent trends, "float fishing" on the Flathead Wild and Scenic River and fishing from small rafts on some of the more remote lakes will increase more than streamside or lake edge fishing. Fishing pressure on some of the Forest's streams and lakes is causing resource damage and/or decreased fish populations.

The potential to increase fish populations exists through making investment in fish habitat improvements. Production potential for fish is limited by the low productivity of Forest streams. The maximum increased production potential for the Forest associated with direct habitat improvement is about 30,000 fish per decade.

For analysis purposes, it was assumed that Forest management activities do not affect lakes or wilderness stream fish populations. The comparison of the Forest Plan to Current Direction focuses on impacts to trout populations in nonwilderness ("managed") streams. In these streams,

timber management activities, including road construction and maintenance can adversely affect fish habitat. Conversely, fish habitat improvement projects can improve habitat and mitigate some adverse impacts.

Current management direction adversely impacts trout populations as displayed in Table VI-2. Riparian management under Current Direction does not provide opportunities for fisheries habitat improvement.

Under the Forest Plan, populations of trout in nonwilderness streams increase and peak in Decade 3 as habitat improvement projects are implemented. Projected increases in timber harvest activities after Decade 3 would theoretically cause numbers to decrease, but Decade 5 numbers would still exceed the current level.

Table VI-2 Catchable Trout [1] (Potential and Existing) [2] - Flathead National Forest

Current Situation	Lakes	987,000
(1980 - Base Year)	Nonwilderness Streams	473,000
	Wilderness Streams	60,000
	Total	1,520,000

		Decade 1	2	3	4	5
Current Management Direction	Lakes	987,000	987,000	987,000	987,000	987,000
	Nonwilderness Streams	432,390 [3]	395,010	315,060	254,030	178,810
	Wilderness Streams	60,000	60,000	60,000	60,000	60,000
	Total	1,479,390	1,442,010	1,362,060	1,301,030	1,225,810
Forest Plan	Lakes	987,000	987,000	987,000	987,000	987,000
	Nonwilderness Streams	548,200	609,244	605,311	600,181	565,252
	Wilderness Streams	60,000	60,000	60,000	60,000	60,000
	Total	1,595,200	1,656,244	1,652,311	1,647,181	1,609,252

It is unlikely that other fish species would decline at the same rate that trout populations do. In some instances, many species, including nongame fish, would thrive and even increase.

[1] Population estimates and projections are based on the Forest's indicator species (bull trout and westslope cutthroat trout) which are most sensitive to impacts to water quality.
[2] Catchable trout numbers presented here are population estimates.
[3] These figures reflect the change that would occur in the first decade, and can be compared to the estimates of existing population.

2. BIG GAME

Estimated existing and potential population levels for elk, mule deer, and whitetailed deer are shown in Table VI-3 and Table VI-4. Winter range forage is generally believed to be the factor limiting population growth.

Not all the animals that inhabit Flathead National Forest lands in the spring, summer, and fall actually winter on Forest lands. The Flathead National Forest has a better opportunity to influence elk and mule deer populations than whitetailed deer, whose numbers are limited by the management of winter ranges on State and private lands.
Some of the winter ranges on National Forest System lands are within the wildernesses where forage production cannot be manipulated. Thus, the potential populations supported by wilderness winter ranges are generally constant, fluctuating only with weather patterns and successional stages of plant growth. About 40 percent of the Forest's current total elk and mule deer population of about 2,000 animals winters within the wildernesses.

Utilizable winter range forage production outside wildernesses can be increased through timber harvest carefully designed and scheduled to increase forage production while retaining the desired relationship of tree cover to available forage. Timber harvesting in the past has been concentrated in easily accessed areas with low logging costs, resulting in heavily roaded and logged whitetailed deer winter ranges. The lack of sufficient cover and poor distribution and size of foraging areas limits the effectiveness of whitetailed deer winter range. Generally in steeper areas, much of the elk and mule deer habitat is in a natural condition, resulting in few forage areas. To date, winter range management objectives have not influenced timber harvest activities to any significant extent. Prescribed burning of winter range areas has been the major habitat improvement activity.

Maximum potential for winter range forage production requires time to attain the correct cover-to-forage relationship. The Forest by the fifth decade could provide forage on lands outside the wildernesses to support over 9,800 elk and mule deer, if that were the sole management objective and all potentially suitable winter range was managed as winter range (see Table VI-3). If the wilderness animals are included, the Forest's forage could support 11,800 elk and mule deer.

Increased levels of hunting pressure are anticipated if current trends continue. In 1980 the Forest experienced 60,000 RVD's of hunting, an increase of 20 percent over 1970.

Table VI-3 Elk and Mule Deer Potential Populations* - Flathead National Forest

	Decade				
	1	2	3	4	5
Maximize Winter Range Forage Benchmark	5,647	6,380	8,540	9,227	9,807
Current Management Direction	5,928	6,075	6,711	6,837	6,698
Forest Plan	5,503	5,706	6,716	7,350	7,800

* Total potential elk and mule deer supported by winter range forage includes nonwilderness animals plus a constant 2,000 animals assumed to be in the wildernesses.

Table VI-4 Whitetailed Deer Potential Populations - Flathead National Forest

	Decade				
	1	2	3	4	5
Maximize Winter Range Forage Benchmark	1,093	1,307	1,960	2,160	2,360
Current Management Direction	1,173	1,217	1,408	1,445	1,404
Forest Plan	1,047	1,108	1,410	1,610	1,734

The Forest Plan requires that over 95 percent of the potential suitable elk and mule deer and about 75 percent of the potentially suitable whitetailed deer winter ranges be managed to achieve desired cover/forage relationships and maximum forage production. By the fifth decade, the Forest could support 7,800 animals on elk and mule deer winter range.

3. THREATENED AND ENDANGERED SPECIES

The Flathead National Forest provides habitat for three endangered species (the gray wolf, bald eage, and peregrine falcon) and one threatened species (the grizzly bear). The Forest is cooperating with State and private wildlife organizations to assess the existence and potential of mountain caribou in the Whitefish Mountains. If located, the caribou would probably be listed as an endangered species in Montana.

The most likely area for maintenance of a viable population of wolves is in the north end of the Forest, adjacent to Glacier National Park and Canada. Forest biologists estimate the current wolf population at 10-20 animals whose home range includes British Columbia and Glacier National Park. At this point security from human disturbance appears to constitute the most critical habitat component.

The Flathead National Forest provides about 65,930 acres of suitable nesting habitat for bald eagles, with 10 active nests on or adjacent to National Forest System lands and nine birds fledged in 1980.

Although the Forest provides approximately 59,000 acres of suitable nesting habitat for peregrine falcon, there are no verified active nests at this time.

Most of the Flathead National Forest is considered essential grizzly bear habitat in the Grizzly Bear Recovery Plan prepared by the U.S. Fish and Wildlife Service. This includes all of the wilderness and nonwilderness acres of the Forest except the 70,000-acre "Island Unit" of the Swan Lake Ranger District (located west of Kalispell) and approximately 175,000 acres of the Tally Lake Ranger District west of Highway U.S. 93. Forest biologists estimate the existing population to be between 150 and 180 grizzly bears.

The grizzly bear habitat improvement program to date has consisted largely of implementing road restrictions to increase bears' security from human disturbance and some prescribed burning in bear feeding areas to increase browse production.

The Grizzly Bear Recovery Plan identifies a target recovered grizzly bear population in the northern Continental Divide ecosystem. The Flathead National Forest is responsible for a portion of this population. This means the Forest would need to provide the essential habitat components necessary to potentially support approximately 207 bears, utilizing a high level of road restrictions and habitat improvement techniques, including timber harvest, planting of desirable shrubs such as huckleberries, and prescribed burning.

Maximum production potential, if all prime grizzly bear habitat were managed "for" grizzly bears, would be habitat to support 230 to 250 bears.

The Forest under this Forest Plan would provide habitat to meet the intent of the Grizzly Bear Recovery Plan, increasing the desirable habitat from the existing level. This Plan includes detailed Grizzly Bear Management Guidelines for all occupied habitat. About 94 percent of occupied habitat is classified as Management Situation 1 and 5 percent as Management Situation 2. About 109,000 acres would be managed specifically to develop quality grizzly habitat and security from human disturbance. This Plan also proposes to establish the Trail Creek Grizzly Bear Management Area in the North Fork. This area will serve as a National model for grizzly bear research and management. The Plan's emphasis on grizzly bear habitat also provides security for gray wolves.
Bald eagle and peregrine falcon nesting sites would be protected through incorporation of management guidelines in all project activities.

4. WILDLIFE DIVERSITY

The diversity of habitats necessary to support the array of native species appears to be adequate. Those groups sensitive to Forest management activities--the tree dependent group, old-growth dependent group, and riparian tree dependent group--are protected to the degree that the Flathead Wild and Scenic River corridor, Jewel Basin Hiking Area, Coram Experimental Forest, the Big Mountain Winter Sports Area, and the three wildernesses are protected.

In other areas of the Forest, habitat diversity is most significantly impacted by timber management activities. Current management direction would over time reduce the acres contributing old growth and riparian tree habitat from the existing situation. This Forest Plan would also result in reduction in acreage contributing these habitats; however, more acres of old growth and riparian tree habitat would be provided than under existing management direction.

F. RANGE

With the exception of natural wet meadows throughout the Forest and natural grass areas in the Bob Marshall Wilderness, the rangeland on the Flathead National Forest is transitory. Forage production on transitory range depends on vegetative manipulation, such as logging and fire.

About 485,000 acres (39 percent) of the nonwilderness Forest are considered potentially suitable for management as grazing allotments for domestic livestock. Wilderness lands have only 357,000 acres (33 percent) which are potentially suitable.

Maximum transitory range forage production could theoretically support at most 12,000 AUM's of domestic livestock on nonwilderness lands. If this were adjusted to reflect transitory range that is or would be accessible and manageable, the Forest could support at most 4,120 AUM's of permitted livestock use.

Swan Lake and Tally Lake Ranger Districts provide nearly all of the domestic livestock grazing opportunities produced on nonwilderness lands. Generally, National Forest System land is an integral part of a much larger grazing unit involving State and private lands. Twenty allotments have been active within the last few years. The Forest's actual grazing during 1980 was 3,654 AUM's (nonwilderness), which is below the 3,850 AUM's that would be available annually under Current Direction if all existing allotments were fully used. The normal grazing use season runs from June through September, and most permittees have cow/calf operations.

The Flathead National Forest's transitory range has economic significance to the permittees, but considering the zone of influence to its entirety, the significance is more social and cultural than economic. The Forest supplies forage to support a small portion of the area's total domestic livestock.

Although local demand for Forest nonwilderness range can be expected to slowly increase in the next decade, the following factors will dampen increases: a relatively small local livestock industry, high transportation costs; and continuing declines in area cattle numbers as property values increase and ranches are subdivided into smaller parcels.

Wilderness forage is grazed by recreationists' stock, Government administrative stock, and wildlife. The amount of forage considered available for transportation stock is constrained by criteria that are designed to protect the wilderness resource. Existing levels of wilderness forage use are estimated to be the highest levels acceptable given these criteria. In fact some areas of the wildernesses are currently being over utilized, creating adverse impacts on the forage and wilderness resources. Other areas are being underused. Ideally use should be better distributed. Low levels of funding limit efforts to disperse use and improve visitor education.

The Flathead National Forest maximum potential for domestic livestock forage is estimated to support 11,000 AUM's of grazing use. The 1980 RPA target of 20,000 AUM's by the year 2030 is well above the Forest's maximum forage production capacity.

This Forest Plan provides a grazing program consistent with existing levels of use. Nonwilderness grazing allotments as provided currently would be maintained except on the Swan Lake District, where management concerns for winter range and grizzly bear management make about 100 potential AUM's unavailable in the upper Swan Valley.

A higher level of funding for wilderness management under this Forest Plan will allow wilderness packstock grazing to remain at existing levels. Overuse of forage in high use areas will be alleviated as stock traffic is better distributed through improved trail maintenance and visitor information.

G. TIMBER

About 835,747 acres or 35 percent of the Flathead National Forest are tentatively suitable for producing commercial timber.* The existing mixture of timber on the Forest is composed of 18 percent lodgepole pine (tree stands with two-thirds or more of the volume lodgepole pine) and 82 percent mixed conifer stands.

Since 1975 mountain pine beetle populations have been at epidemic levels, most severely impacting the lodgepole pine. The infestation is moving through susceptible stands across the Forest, and the epidemic is expected to subside by 1990 as susceptible lodgepole pine stands are killed or harvested. In 1979 the Forest implemented an aggressive program to harvest lodgepole pine to reduce losses in timber volume and stumpage values due to mountain pine beetle caused mortality. This program greatly increased the proportion of lodgepole pine in the Forest's timber harvest volumes as compared to pre-1978 timber harvest programs. This Plan continues to emphasize salvage of beetle infested lodgepole pine stands.

Historically, the majority of timber management activity has occurred on the less than 40 percent slopes. Of the total potentially suitable commercial timberland, 46 percent occurs on slopes of 40 percent or less, 27 percent on 40 to 60 percent slopes, and 27 percent on slopes exceeding 60 percent slope.

The concentration of harvesting on lower slopes in certain drainages, in combination with the aggressive lodgepole pine harvest program developed in response to the mountain pine beetle epidemic, has led to situations where the capability of watersheds to accept the increased sedimentation and water yield associated with timber harvest has been approached and in some cases met or exceeded current Flathead watershed management guidelines.

The 1969 Flathead Timber Management Plan, adjusted for land classification changes, projects an allowable timber harvest volume of 124 MMBF per year. The average annual volume sold since 1975 has been 116.2 MMBF per year. The quantity cut for the same 15-year period is 101 MMBF per year.

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* The timber inventory data base used in this Forest planning process includes lands producing at least 20 cubic feet of timber per acre per year.

The Forest currently has about 475 MMBF of timber volume sold and under contract but uncut.* This level of uncut volume is higher than the historical average of about 200 MMBF. National economic conditions have led to this higher volume sold but uncut. This volume probably will be reduced during the next 3 years.

If timber harvest is maximized on all potentially suitable Forest acres, the biological production potential of the Forest is 171 MMBF for the first three decades with a long run sustained yield capacity of 201 MMBF. Normal production capacity of zone of influence sawmills producing at least 10 MMBF per year was determined in 1976 to be 687 MMBF, with about 322 MMBF of that capacity located in Flathead County.

In 1976 there was variation in the original ownership of sawtimber received by sawmills and plywood plants within the zone of influence. In Flathead County, about 65 percent of the total sawtimber received by area mills was harvested from National Forest System lands. Approximately 30 percent was harvested from private lands. On the other hand, in Lake and Missoula Counties only 18 percent of locally utilized sawtimber was of National Forest origin while 75 percent had been harvested on private lands.

Timber from the Flathead National Forest has historically been processed primarily in Flathead County, with smaller percentages utilized by mills in Missoula and Lake Counties. Approximately half the timber volume used by Flathead County mills has been harvested from Flathead National Forest lands. About one-fourth the volume used in Lake County and a much smaller percentage but higher volume of material processed in Missoula came from the Flathead National Forest.

The Forest's RPA timber harvest objectives could be met by continuing the management direction specified under Current Direction (see Table VI-5). The Forest Plan specifies a timber harvest volume of 100 MMBF for the first decade and a long run sustained yield capacity of 149 MMBF. Table VI-5 displays the timber harvest volumes and suitable land base that would exist on the Forest under Current Direction, the maximize timber production benchmark, and this Forest Plan. RPA objectives are also displayed.

Table VI-5 Timber Potential Base Harvest Schedule - Average Annual MMCF (MMBF in parentheses) - Flathead National Forest

	Decade				
	1	2	3	4	5
Maximize Timber Benchmark	42.8 (171)	42.8 (171)	42.8 (171)	44.6 (178)	47.5 (190)
Current Management Direction	30.8 (132)	30.8 (122)	38.5 (167)	38.5 (143)	38.5 (161)
Forest Plan	25.7 (100)	25.7 (106)	25.8 (111)	31.0 (119)	37.2 (152)
RPA Objectives	(119)	(120)	(135)	(149)	(167)

* See Appendix N for a summary of the timber sold and cut between the years 1961 and 1984.

H. VEGETATIVE DIVERSITY

Flathead National Forest plant communities are naturally diverse. Most of the major vegetative habitat types common to western Montana are located on significant acreages of the Forest. The interaction of topographic and climatic variation is evidenced in the wide array of habitats, ranging from the warm dry ponderosa pine/bunchgrass type to the cool moist whitebark pine types. Nearly all tree species native to western Montana grow within the National Forest boundaries.

The commercial timber management program, which through harvest converts old growth timber stands to young stands, has had a significant impact on vegetative renewal. Even-aged regeneration (clearcut, shelterwood, and seed tree) systems have been used since the 1950's. A substantial portion of the old growth on the Forest has been harvested.

Sufficient old growth to provide habitat for viable populations of old growth dependent animal species remains throughout the Forest in areas where management objectives preclude timber harvest. Accelerated harvesting of even-aged lodgepole pine stands has the potential for increasing species mix. Existing diversity appears to be adequate to meet multiple-use resource management objectives.
Under this Forest Plan, management guidelines specifying vegetative management practices recognize the desirability of maintaining natural vegetative diversity on specific sites. Over the long term, the spatial distribution of tree species and age classes would increase over historic and existing situations.

I. WATER

The Flathead National Forest provides approximately 7,000,000 acre-feet of water per year to the Columbia River drainage. Five major systems feed into the Flathead River drainage which eventually flows into the Columbia system. The chemical water quality of streams and rivers on the Forest is generally excellent. The water quality contaminant most commonly associated with land management is sediment. Compared to chemical characteristics, natural sediment is highly variable. This includes variability between watersheds and seasonally within a given watershed.

There are several community water supply watersheds located partially or totally on the Forest. Other noncommunity water supplies are obtained from wells, springs, or infiltration galleries that directly or indirectly receive water from National Forest System lands.

The Forest has developed ground water and surface water supplies furnishing potable water to 12 campgrounds and picnic areas and 17 administrative sites. A number of summer homes and outfitter camps also use National Forest streams for drinking water. Major uses of water on the Forest are detailed below:

Table VI-6 Major Uses of Water - Flathead National Forest

Source	Use	Number
Well	Administrative Sites	9
Stream	Administrative Sites	8
Well	Recreation Sites	5
Stream	Recreation Sites	7
Stream	Outfitter Camps	58
Stream	Summer Homes	27
Stream	Livestock	25
Wells & Streams	Other (resorts, fish hatchery, seed orchard, fire retardant plant)	10

The Spotted Bear Ranger Station has a small hydropower facility. About 3 or 4 FERC applications to study the feasibility of commercial microhydro sites on the Forest are in various stages of processing.

Management activities on National Forest System lands have affected water quality in the nonwilderness watersheds through increases in water quantity and in sedimentation over natural levels. Timber harvest, associated road construction activities, and, to a lesser extent, livestock grazing have an effect on the water resource. In addition, localized heavy recreation use has had minor affects on water quality.

The majority of potential sediment produced by management activities can be controlled through specialized techniques in project design, unit layout, road construction, and maintenance, along with immediate stabilization efforts. Potentially damaging water yield and sediment load increases can be prevented through careful scheduling and location of timber harvest. Some degree of increase in sedimentation and water yield over natural is inevitable if ground-disturbing management activities are to occur.

In an effort to ensure that potential increases in water yield and sedimentation are acceptable and do not adversely impact uses of the Forest's water resource, "beneficial uses" of watersheds have been identified.

The three categories are: public water supplies, fisheries, and other uses, including recreation and scenic values. Watersheds on the Forest have been grouped based on one or more of these beneficial uses.

Streams have also been evaluated as to their channel conditions, receiving ratings of "good," "fair," or "poor." These ratings relate to the stream's ability to absorb upstream ground disturbance without evidencing adverse impacts.

Watersheds used as community water supplies will be managed according to FSM 2543.12 "Requirements for Municipal Watersheds." Watersheds used as noncommunity water supplies will be managed with best management practices under the State water quality classification for the watershed.

Continuation of current management would not adversely affect wilderness watersheds but would result in adverse effects on a significant number of nonwilderness watersheds throughout the Forest.

Implementation of this Forest Plan will significantly decrease advance effects of Forest management activities on watersheds and will allow meeting all State water quality standards.

J. MINERALS

Mineral resource management requires the Forest Service to conform to Congressional mandates to make minerals from National Forest System land available and at the same time to minimize the adverse effects of mining activities on surface resources.

Minerals management on National Forest System lands requires interagency coordination and cooperation. Although the Forest Service is responsible for the management of the surface resources, the BLM (Bureau of Land Management) in the Department of the Interior is primarily responsible for management of Federal minerals.

The dominant mineral activity on the Forest is oil and gas leasing. Over 1,000,000 acres were leased or under lease application in 1984. A Federal court ruling in 1985 caused the BLM to suspend those leases until litigation is completed. Before action is recommended on any lease application, additional site-specific analysis of environmental effects will be done.

Each lease, when issued, includes numerous standard and special stipulations to minimize effects of oil and gas activities on surface resources. In almost all instances, oil and gas exploration, development, and production can occur without causing unacceptable effects to soil, water, timber, range, scenic, wildlife, cultural, and recreation values.
In rare situations where the oil and gas activity and the surface management are incompatible, the Federal Government can decide which resource will be the dominant use. The Forest Service makes recommendations on these matters; the final decisions are made by the BLM.

Hard rock mining and exploration is under the authority of the 1872 General Mining Law, which entitles the miner to do all reasonable and necessary activity to explore for and develop mineral resources. Forest Service control of these activities is through its surface mining regulations.

Currently there are about 50 to 100 unpatented mining claims on the Flathead National Forest. There are no known active mining operations, nor has any "Notice of Intent" been submitted for approval. No commercial ore deposits are known to exist on the Flathead National Forest. Since no commercial site deposits of hard rock minerals have been discovered on the Flathead National Forest over the last 70 years, it is anticipated that no mines will be developed in the immediate future.

Common variety minerals, such as gravel and common rock deposits, are extensively utilized for State, County, and Forest Service road construction and maintenance. About four mineral material permits (no charge) are issued to State and County agencies each year. The Forest Service uses about 12,000 tons of this type of material each year. No attempt has been made to estimate a dollar value for these materials.

Federal statute permits withdrawal of areas from appropriation, entry, or use for mining in order to protect certain surface resource values or Government improvements. About 38,800 acres of the Flathead National Forest are currently withdrawn. Congress withdrew 24,520 acres of that area by classifying portions of South and Middle Forks of the Flathead River as components of the National Wild and Scenic Rivers System. The remaining 13,265 acres were withdrawn to protect the Coram Experimental Forest and various other administrative and recreation sites. All of these withdrawals will be reviewed within 8 years for possible termination. The current policy is to terminate most of these kinds of withdrawals since the Forest Service's 1974 surface mining regulations protect Government improvements and special surface resources.

Current management direction established through the Unit Plans and District Multiple-Use Plans would result in a relatively unrestricted minerals management program. The management direction of this Forest Plan requires more special lease stipulations to protect sensitive areas and surface resources from possible adverse surface disturbances associated with mineral development. Acres impacted by special stipulations under Current Direction and under this Forest Plan are summarized in Table VI-6.

K. LANDS

Within the exterior boundaries of the Flathead National Forest, there are 278,740 acres of non-National Forest ownership. Major owners of these inholdings are Plum Creek Timber Company, Inc., State of Montana (mostly school trust lands), and Champion International. A major checkerboard landownership pattern exists in the upper Swan Valley with Plum Creek Timber Company, Inc., and the State of Montana. Widespread subdivisions for recreation and rural residential use over the past decade has resulted in thousands of other small landownerships.

Landownership adjustment has been accomplished in compliance with a 1967 Comprehensive Land Adjustment Plan. This document emphasizes landownership consolidation without fully weighing other resource management objectives, such as big-game winter range, maintenance of riparian areas, and threatened and endangered species. The goal of the current land exchange program is to complete about 2,200 acres of landownership adjustments per year that accomplish resource management objectives.

Under this Forest Plan, the land adjustment program will comply with landownership adjustment guidelines.

Table VI-7 Acres Impacted by Special Stipulations and Controls - Oil and Gas Leases - Flathead National Forest

Oil and Gas	Current Management Direction	Forest Plan
Category A *	1,096,277	1,172,800
Category B	76,634	150,100
Category C	1,179,578	1,007,500
Category D	0	0

Category A: In this category, surface and subsurface resource conflicts are resolved through mineral withdrawal - existing or proposed.

Category B: In this category, certain surface resources are protected by Statute, Executive Orders, or mitigation measures.

Category C: In this category, the Regional Forester has specified certain protective stipulations to protect special surface values.

Category D: These are lands where no special stipulations other than the normal standard stipulations. There are no Category D lands on the Flathead National Forest.

Emphasis would be given to acquisition of land and interests in land to allow full road and trail access to all National Forest recreation areas and commercial timberland areas. Efforts will be made to acquire stream access sites along the Flathead Wild and Scenic River and trailhead access into the Mission Mountains Wilderness. Emphasis will also be given for acquisition in special wildlife management areas, riparian habitat, recreation areas, and endangered species habitat. Whenever possible land exchanges will trade like lands (timberland for timberland). The objecitve is to maintain the current level of suitable forest land in order to maintain a stable timber supply for local mills. Special emphasis would be given to continue the Land and Water Conservation Fund land acquisition program on the Flathead Wild and Scenic River.

L. ROADS

As of 1980 there were 3,146 miles of existing road on the Forest, including approximately 222 miles of arterial roads, 813 miles of collector roads, and 2,111 miles of local roads. Local roads include 320 miles of primitive roads which are identified during area transportation planning efforts either for retention on the system of roads or for obliteration.
The Forest,s arterial road system is 100 percent complete, while the collector road system is about 95 percent complete. The existing local roads system, if Current Direction were maintained, would be about 40 percent complete. The majority of roads yet to be built are local roads providing direct, final linkage to the timber resource.

* All designated wildernesses were permanently withdrawn on December 31, 1983, by the Wilderness Act, from all forms of mineral activity. This wilderness acreage includes 22,162 acres of "wild" river area withdrawn by Congress. The interior portions of Jewel Basin, totaling 3,200 acres, which cannot be accessed without surface occupancy and which cannot be accessed through directional drilling from outside of Jewel Basin will be withdrawn from oil and gas leasing. The remainder of Jewel Basin is listed in Category C.

Historically, road management programs have been developed and implemented by the Ranger District administrative levels leading to road management policies that varied from one District to another. No Forest-wide policy or direction existed. In 1982, the Forest Supervisor implemented the Forest Travel Planning Policy and Procedures. This policy provides for synchronizing the Forest Access Map with the Forest Plan. The basic policy is to provide the greatest possible level of public access while promoting public safety, protecting resources, and minimizing user conflicts commensurate with the Forest Plan.

Table VI-7 compares the road requirements and road management program of this Forest Plan to that which would occur under Current Direction. The greatest possible level of public access commensurate with promoting public safety, protecting resources, and minimizing user conflicts would be provided. This Forest Plan will require fewer total roads at full development and will implement a more restrictive road management program primarily due to the need for increased wildlife security (see road management objectives and standards in Chapter II).

Table VI-8 Roads, Existing, and To Be Constructed - Flathead National Forest

Roads	Current Management Direction	Forest Plan
Existing Miles	3,146	3,146
To Be Constructed	3,455	2,441
Miles To Be Built by Decade (Average Annual)		
Decade 1	67.2	50.8
2	62.5	37.3
3	84.8	29.6
4	89.6	72.4
5	21.1	54.0
Five-decade Total	3,252	2,441
Average Road Density at Full Development*	3.4	3.0
Desired Open Road Density**	2.8	1.3

* Road density in miles per square mile based on 1961 square miles outside wilderness designations and total miles of road for full level development.

** Maximum density of roads open for use without restrictions during summer season. Density calculations are based on 1,961 square miles outside wilderness designations.

NOTE: Average miles of road reconstruction per decade for the first five decades is 170, for Decades 6-15, 50.

M. PROTECTION

The Flathead National Forest's vegetation reflects the ongoing impacts of fire. The greatest number of acres were burned in 1910, 1926, and 1929, resulting in the existing acreages of 50- to 70-year old lodgepole pine. Fire reports indicate the Forest experiences about 75 fires per year, the majority caused by lightning.

Lodgepole pine killed by mountain pine beetle and still standing on the Forest will create a major fuel buildup over the next few years as the trees decay and fall.

The incidence of person-caused fires has grown slightly in recent years. Increased recreational activities anticipated in the future as well as accelerated residential development of intermingled private lands has the potential for increasing the number of person-caused fires.

In 1980 the number of timbered Flathead National Forest acres affected by the mountain pine beetle increased to about 315,000--a 260 percent increase since 1979. The greatest concentration continues to be on the Glacier View and Tally Lake Ranger Districts. A resurgence of the mountain pine beetle occurred in 1984 and 1985 and is expected to continue through the 1980's. That resurgence is occurring on the Tally Lake Ranger District and the "Island" unit of the Swan Lake Ranger District.

The tabulation below shows the maximum potential loss due to mountain pine beetle given no timber harvest:

Table VI-9 Potential Loss Due to Mountain Pine Beetle - Flathead National Forest

	Average MMBF Per Year				
	DECADE				
	1	2	3	4	5
High Productivity lodgepole pine stands	2.9	12.5	15.1	23.1	11.7
Low Productivity lodgepole pine stands	2.9	1.0	2.5	7.8	14.3
Forest Total	5.8	13.5	17.6	30.9	26.0

If stands were allowed to grow and die unmanaged over a 50-year period, this would represent a total potential loss of 938 MMBF, or an average annual loss of 19 MMBF.

The Flathead National Forest management objective has been to salvage extensive amounts of lodgepole pine before serious losses occur. Not all beetle-killed lodgepole pine can be utilized because of other resource values. This objective is retained under this Forest Plan.

Spruce bark beetle activity was recently noted in three drainages of the North Fork and in the Middle Fork of the Flathead River. Conditions fostering the current buildup originated several years ago in scattered spruce blowdown. The spruce bark beetle affects mature spruce trees. Not many extensive spruce stands remain due to previous harvests. Much of the remaining spruce cannot be harvested due to lack of access and other resource constraints.

Other Forest insects and diseases are presently at endemic population levels and are manageable.

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VII. Glossary

ACCESS See Public Access.

ACRE-EQUIVALENT A unit of habitat output related to fish or wildlife habitat improvement projects. Acre equivalents are based on the number of acres of habitat that are influenced by one habitat acre actually modified by the habitat improvement project.

ACRE-FOOT A measure of water or sediment volume equal to the amount which would cover an area of 1 acre to a depth of 1 foot (325,851 gallons or 43,560 cubic feet).

ACTIVITY A measure, course of action, or treatment that is undertaken to directly or indirectly produce, enhance, or maintain forest and rangeland outputs or achieve administrative or environmental quality objectives.

ACTIVITY FUELS Debris generated by a Forest activity that increases fire potential such a firewood gathering, precommnercial thinning, timber harvesting, and road construction.

ACTIVITY TYPE The further description of the actions, measures, or treatments within an activity.

ADFLUVIAL Freshwater fish that migrate from freshwater lakes to freshwater streams to spawn.

ADMINISTRATIVE FACILITIES Those facilities, such as Ranger Stations, work centers, and cabins which are used by the Forest Service in the management of the National Forest.

AIRSHED Basic geographic units in which air quality is managed.

AFFECTED ENVIRONMENT The biological and physical environment that will or may be changed by actions proposed and the relationship of people to that environment.

ALLOTMENT See Range Allotment.

ALLOWABLE SALE QUANTITY The quantity of timber that may be sold from the area of suitable land covered by the Forest Plan for a time period specified by the plan. This quantity is usually expressed on an annual basis as the "average annual allowable sale quantity."

ALTERNATIVE A combination of management prescriptions applied in specific amounts and locations to achieve a desired management emphasis as expressed in goals and objectives. One of several policies, plans, or projects proposed for decisionmaking. An alternative need not substitute for another in all respects.

ALTERNATIVE MANAGEMENT DIRECTION STATEMENT A descriptive paragraph that defines the management theme that guides land designations, management activities, and programs.

ALTERNATIVE, NO ACTION An alternative that maintains established trends or management direction.

AMENTITY VALUES Resource use for which market values (or proxy values) are not or cannot be established.

ANADROMOUS FISH Fish which spend much of their adult life in the ocean, returning to inland waters to spawn; e.g., salmon, steelhead.

ANALYSIS AREA One or more capability areas combined for the purpose of analysis in formulating alternatives and estimating various impacts and effects.

ANALYSIS OF THE MANAGEMENT SITUATION A determination of the ability of the planning area to supply goods and services in response to society's demand for those goods and services.

ANALYSIS PERIOD, LONG TERM A time horizon of expenditures in an analysis that is two or more 5-Year RPA planning periods in duration. RPA, program, Regional Guide, and Forest Plan analyses have long-term periods.

ANALYSIS PERIOD, SHORT TERM A time horizon of expenditures in an analysis that is only several years in duration. A budget analysis is short-term.

ANIMAL UNIT MONTH (AUM) The quantity of forage required by the equivalent of a 1000 lb. mature cow for 1 month.

ANNUAL FOREST PROGRAM The summary or aggregation of all projects for a given year that, for a given level of funding, make up an integrated (multi-functional) course of action on a Forest planning area.

AQUATIC ECOSYSTEM A stream channel, lake or estuary bed, the water itself, and the biotic communities that occur therein.

ARTERIAL ROADS Roads comprising the basic access network for National Forest System administrative and management activities. These roads serve all resources to a substantial extent, and maintenance is not normally determined by the activities of any one resource. They provide service to large land areas and usually connect with public highways or other Forest arterial roads to form an integrated network of primary travel routes. The location and standards are often determined by a demand for maximum mobility and travel efficiency rather than by a specific resource management service. Usually they are developed and operated for long-term land and resource management purposes and constant service.

ASSESSMENT The Renewable Resource Assessment required by the Resource Planning Act (see Renewable Resource Assessment).

ASSET, CAPITAL A natural resource, manmade structure, facility, or improvement in natural resources used as an input in production processes.

ASSET, RESIDUAL The remaining value of a capital asset at the end of the time horizon of the planning or analytical process.

AVAILABLE FOREST LAND Land that has not been legislatively or administratively withdrawn from timber production by the Secretary of Agriculture or Forest Service Chief.

AUM See Animal Unit Month.

AVERAGE ANNUAL CUT The volume of timber harvested in a decade, divided by 10.

BASE SALE SCHEDULE (Base Timber Harvest Schedule) A timber sale schedule formulated on the basis that the quantity of timber planned for sale and harvest for any future decade is equal to or greater than the planned sale and harvest for the preceding decade, and this planned sale and harvest is not greater than the long-term sustained yield capacity.

BENCHMARK Reference points that define the bounds within which feasible management alternatives can be developed. Benchmarks may be defined by resource output or economic measures.

BENEFIT-COST RATIO Measure of economic efficiency, computed by dividing total discounted primary benefits by total discounted economic costs.

BENEFIT, DIRECT A primary benefit that fulfills specified objectives of the policy, program, or project.

BENEFIT, INDUCED A primary benefit from an output that is incidental to the objectives of the policy, program, or project.

BENEFIT, PRIMARY A benefit accruing to resource owners from a primary output, which may be direct or induced, or a residual asset. Primary benefits are components of net public benefits.

BENEFIT, SUMMARY A benefit accruing to parties other than the resource owners, including effects on local, regional, and National economies and on consumers of outputs. Secondary benefits are not necessarily included in net public benefits.

BENEFIT (VALUE) Inclusive terms to quantify the results of a proposed activity, project, or program expressed in monetary or nonmonetary terms.

BEST MANAGEMENT PRACTICES (BMP) The set of practices in the Forest Plan which, when applied during implementation of a project, ensures that water related benefical uses are protected and that State water quality standards are met. BMP's can take several forms. Some are defined by State regulation or memoranda of understanding between the Forest Service and the States. Best Management Practices for the Flathead River drainage are defined in Appendix A of the Flathead Drainage 208 Project (Appendix HH of the Forest Plan). Others are defined by the Forest interdisciplinary planning team for Forest-wide application. Both of these kinds of BMP's are included in the Forest Plan as Forest-wide standards. A third kind are identified by the interdisciplinary team for application to specific Management Areas; these are included as Management Area Standards in the appropriate management areas. A fourth kind, project level BMP's, are based on site specific evaluation and represent the most effective and practicable means of accomplishing the water quality and other goals of the specfic area involved in the project. These project level BMP's can either supplement or replace the Forest Plan standards for specific projects.

BIG GAME Those species of large mammals normally managed as a sport hunting resource.

BIG-GAME SUMMER RANGE Land used by big game during the summer months.

BIG-GAME WINTER RANGE The area available to and used by big game through the winter season.

BIOLOGICAL POTENTIAL The maximum possible output of a given resource limited only by its inherent physical and biological characteristics.

BIOLOGICAL GROWTH POTENTIAL The average net growth attainable in a fully stocked natural forest stand.

BOARD FOOT A unit of measurement represented by a board one foot square and one inch thick.

BROADCAST BURN Allowing a controlled fire to burn over a designated area within well-defined boundaries for reduction of fuel hazard, as a silvicultural treatment, or both.

BOARD FOOT/CUBIC FOOT CONVERSION The mathematical ratio of the board feet contained in one cubic foot of timber. This ratio varies with tree species, mdiameter, height, and form factors.

BROWSE Twigs, leaves, and young shoots of trees and shrubs on which animals feed; in particular, those shrubs which are utilized by big-game animals for food.

CANOPY The more or less continuous cover of branches and foliage formed collectively by the crown of adjacent trees and other woody growth.

CAPABILITY The potential of an area of land and or water to produce resources, supply goods and services, and allow resource uses under a specified set of management practices and at a given level of management intensity. Capability depends upon current conditions and site conditions such as climate, slope, landform, soils, and geology, as well as the application of management practices such as silviculture or protection from fires, insects, and disease.

CAPABILITY AREA A geographic delineation used to describe characteristics of the land and resources in integrated Forest planning. Capability areas may be synonmous with ecological land units, ecosystems, or land response units.

CAPITAL INVESTMENT Investment in facilities such as roads and structures with specially appropriated funds.

CARRYING CAPACITY 1 (recreation): the amount of recreation use an area can sustain without deterioration of site quality; 2 (wildlife): the maximum number of animals an area can support during a given period of the year; and 3 (range): the maximum stocking rate possible without damaging the vegetation or related resources. Carrying capacity may vary from year to year on the same area due to fluctuating forage production.

CAVITY A hollow in a tree that is used by birds or mammals for roosting and reproduction.

CEQ See Council of Environmental Quality.

CFR Code of Federal Regulations.

CHARGEABLE VOLUME Chargeable volume is all volume that is included in the growth and yield projections for the selected management prescriptions used to arrive at the "allowable sale quantity," based on Regional utilization standards.

CLEARCUTTING Harvesting of all trees in one cut. It prepares the area for a new, even-aged stand. The area harvested may be a patch, stand, or strip large enough to be mapped or recorded as separate age class in planning. Regeneration is obtained through natural seeding or through planting or direct seeding.

CLIMAX PLANT COMMUNITY The final or stable biotic community in a developmental series.

CLOSURE The administrative order that does not allow specified uses in designated areas or on Forest development roads or trails.

CMAI See Culmination of Mean Annual Increment.

COEFFICIENT (COST, VALUE, YIELD) The numeric units used to include costs, values, and outputs in the analysis model used in the formulation of the Forest Plan.

COLLECTOR ROADS Roads constructed to serve two or more elements but which do not fit into the other two road categories (arterial or local). Construction costs of these facilities are prorated to the respective element served. These roads serve smaller land areas and are usually connected to a Forest arterial or public highway. They collect traffic from local Forest roads or terminal facilities. The location and standard are influenced by both long-term multi-resource service needs and travel efficiency. Forest collector roads are operated for constant or intermittent service, depending on land use and resource management objectives for the area served by the facility.

COMMERICAL FOREST LAND (SUITABLE TIMBERLAND) Land that is producing, or is capable of producing, crops of industrial wood and (1) has not been withdrawn by Congress, the Secretary of Agriculture, or the Chief of the Forest Service; (2) where existing technology and knowledge is available to ensure timber production without irreversible damage to soils productivity or watershed conditions; and (3) where existing technology and knowledge, as reflected in current research and experience, provides reasonable assurance that adequate restocking can be obtained within years after final harvesting.

COMMERCIAL TIMBER SALES The selling of timber from National Forest System lands for the economic gain of the party removing and marketing the trees.

COMMODITIES Resources with commercial value; all resource products which are articles of commerce, such as timber, range forage, and minerals.

COMMON MATERIALS See Minerals, Common Variety.

COMMUNITY COHESION The degree of unity and cooperation within a community in working toward shared goals and solutions to problems.

COMMUNITY STABILITY The capacity of a community to absorb and cope with change without major hardship to institutions or groups within the community.

CONCERN See Management Concern.

CONDITION CLASS A descriptive category of the existing tree vegetation as it relates to size, stocking, and age.

CONFINE (Confine a Fire). To restrict the fire within determined boundaries established either prior to the fire, during the fire, or in an escaped fire situation analysis. Surveillance may be appropriate when the fire will be self-confined with a defined perimeter.

CONGRESSIONALLY DESIGNATED AREAS Areas established by Congressional legislation, such as Recreation Areas.

CONSTRAINT A confinement or restriction on the range of permissible choices.

CONSUMPTIVE USES Uses of a resource that reduce the supply. Examples of some consumptive uses of water are irrigation, domestic and industrial water use, grazing, and timber harvest.

CONTAIN (Contain a Fire). To surround a fire and any spot fires with control line, as needed, which can reasonably be expected to check the fire's spread under prevailing and predicted conditions.

CONTINENTAL DIVIDE The drainage divide between waters flowing to the Atlantic Ocean and the Pacific Ocean.

CONTROL (Control a Fire). To complete the control line around a fire, any spot fires, and any interior islands to be saved; burn out any unburned area adjacent to the fire side of the control line; and cool down all hot spots that are immediate threats to the control line, until the line can reasonably be expected to hold under forseeable conditions.

CORD A unit of gross volume measurement for stacked roundwood based on external dimensions, generally implies a stack of 4 feet by 4 feet vertical cross section and 8 feet long, contains 128 stacked cubic feet.

CORDUROY A method of subgrade reinforcement often used on trails and for some roads whereby logs are placed perpendicular to the traveled way to support a surfacing material.

CORRIDOR (UTILITY CORRIDOR) A linear strip of land which has ecological, technical, economic, social, or similar advantages over other areas for the present or future location of transportation or utility routes.

COST The negative or adverse effects or expenditures resulting from an action. Costs may be monetary, social, physical or environmental in nature.

COST EFFICIENCY The usefulness of specified inputs (costs) to produce specified outputs (benefits). In measuring cost efficiency, some outputs, including environmental, economic, or social impacts, are not assigned monetary values but are achieved at specific levels in the least cost manner. Cost efficiency is usually measured using present net value, although use of benefit-cost ratios and rates of return may be appropriate.

COST-SHARE Refers to the process of cooperating in the joint development of a road system. The document executed through this process, called "Road Right-of-Way Construction and Use Agreement," specifies the terms of developing the transportation system for a specified land area.

COUNCIL ON ENVIRONMENTAL QUALITY An advisory council to the President established by the National Environmental Policy Act of 1969. It reviews Federal programs for their effect on the environment, conducts environmental studies, and advises the President on environmental matters.

COVER/FORAGE RATIO The ratio of tree cover (usually conifer types) to foraging areas (natural openings, clearcuts, etc.)

CRITICAL HABITAT Specific areas within the geographical area occupied by the species on which are found those physical and biological features (1) essential to the conservation of the species, and (2) which may require special management considerations or protection. Critical habitat shall not include the entire geographic area which can be occupied by the threatened and endangered species.

CUBIC FOOT The amount of wood volume equivalent to a cube 1 foot by 1 foot by 1 foot.

CULMINATION OF MEAN ANNUAL INCREMENT (CMAI) The point at which the volume increment for a tree or stand of trees has achieved it's highest mean value. Mean annual increment is based on expected growth according to the management intensities and utilization standards assumed in the Forest Plan. The CMAI is calculated by dividing the attained growth (volume) by it's corresponding age.

CULTURAL RESOURCES The physical remains of human activity (artifacts, ruins, burial mounds, petroglyphs, etc.) and conceptual content or context (as a setting for legendary, historic, or prehistoric events, as a sacred area of native peoples, etc.) of an area of prehistoric or historic occupation.

CUTTING CYCLE For a crop or stand, the planned interval of time between the beginning of one cutting period and the beginning of the suceeding cutting period.

DEFICIT TIMBER SALE A timber sale that has an appraised value that would produce less than a standard profit and risk margin for an average operator as estimated by the Forest Service appraisal system.

DEMAND The amount of output that users are willing to take at a specific price, time period, and conditions of sale.

DEMAND ANALYSIS A study of the factors affecting the schedule of demand for a good or service, including the price-quantity relationship, if applicable.

DEPARTURE A schedule which deviates from the principle of nondeclining flow by exhibiting a planned decrease in the timber sale and harvest schedule at any time in the future.

DEPENDENT COMMUNITIES Communities whose social, economic, or political life would become discernably different in important respects if market or nonmarket outputs from the National Forests were cut off.

DEVELOPED RECREATION Recreation that occurs where improvements enhance recreation opportunities and accommodate intensive recreation activities in a defined area.

DEVELOPED RECREATION SITES Relatively small, distinctly defined area where facilities are provided for concentrated public use, i.e., campgrounds, picnic areas, and swimming areas.

DIAMETER BREAST HEIGHT (DBH) The diameter of a tree measured 4-1/2 feet above the ground.

DIRECT EFFECTS Effects on the environment which occur at the same time and place as the initial cause or action.

DISCOUNT RATE An interest rate that reflects the cost or time value of money. It is used in discounting future costs and benefits.

DISCOUNTING An economic adjustment for the time value of money; mathematical reduction of costs and/or benefits which occur in the future to the present time for purposes of comparison.

DISPERSED RECREATION That portion of outdoor recreation use which occurs outside of developed sites in the unroaded and roaded Forest environment; i.e., hunting, backpacking, and berrypicking.

DISTRICT RANGER The official responsible for administering the National Forest System lands on a Ranger District.

DIVERSITY The distribution and abundance of different plant and animal communities and species within the area covered by a land and resource management plan.

DRAFT ENVIRONMENTAL IMPACT STATEMENT See Environmental Impact Statement, draft.

ECONOMICS The study of how limited resources, goods, and services are allocated among competing uses.

ECOSYSTEM A complete, interacting system of organisms considered together with their environment; i.e., a marsh, watershed, or lake.

ECOTONE A transition or junction zone between two or more diverse communities (ecosystems).

EDAPHIC The influence of soils on living organisms, particularly plants, including man's use of the land for plant growth.

EFFECTS Physical, biological, social, and economic results (expected or experienced) resulting from achievement of outputs. Effects can be direct, indirect, and cumulative.

EFFICIENCY, ECONOMIC The usefulness of inputs (costs) to produce outputs (benefits) and effects when all costs and benefits that can be identified and valued are included in the computations. Economic efficiency is usually measured using present net value, though use of benefit-cost ratios and rates-of-return may sometimes be appropriate.

ELK HIDING COVER Vegetation, primarily trees, capable of hiding 90% of an elk seen from a distance of 200 feet or less.

ELK SECURITY COVER (EFFECTIVE ELK SECURITY COVER) Elk hiding cover modified by open roads. The greater the density of open roads within an area, the less effective is the hiding cover in providing security for elk.

ENDANGERED SPECIES Any species, plant or animal, which is in danger of extinction throughout all or a significant portion of its range. Endangered species are identified by the Secretary of the Interior in accordance with the 1973 Endangered Species Act.

ENDING INVENTORY CONSTRAINT (EIC) Constraint to ensure that the total timber volume left at the end of the planning horizon will equal or exceed the volume that would occur in a managed Forest.

ENVIRONMENTAL ANALYSIS An analysis of alternative actions and their predictable short- and long-term environmental effects which include physical, biological, economic, social, and environmental design factors and their interactions.

ENVIRONMENTAL ASSESSMENT A concise public document for which a Federal agency is responsible that serves to: (1) Briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact; (2) Aid an agency's compliance with the National Environmental Policy Act when no environmental impact statement is necessary; and (3) Facilitate preparation of an environmental impact statement when one is necessary.

ENVIRONMENTAL IMPACT STATEMENT, DRAFT (DEIS) A detailed written statement as required by Sec. 102(2)(C) of the National Environmental Policy Act.

ENVIRONMENTAL IMPACT STATEMENT, FINAL (FEIS) The final version of the public document required by NEPA (see above).

EPHEMERAL STREAMS Streams that flow only as a direct response to rainfall or snowmelt events. They have no baseflow.

EROSION The group of processes whereby earthy or rocky material is worn away by natural sources such as wind, water, or ice and removed from any part of the earth's surface.

ESCAPEMENT The number of adult anadromous fish escaping past commercial and recreational harvest fisheries and other sources of mortality to upstream spawning areas.

EVEN-AGED MANAGEMENT The application of a combination of actions that result in the creation of stands in which trees of essentially the same age grow together. Managed even-aged Forests are characterized by a distribution of the stands of varying ages (and, therefore, tree sizes) throughout the Forest area. The difference in ages between trees forming the main canopy level of the stand does not usually exceed 20 percent of the age of the stand at harvest rotation age. Regeneration in a particular stand is obtained during a short period at or near the

time that a stand has reached the desired age or size for regeneration and is harvested. Cutting methods include clearcutting, shelterwood cutting, and seed tree cutting.

EXPERIENCE LEVELS A concept used in recreation management to delineate the range of opportunities for satisfying basic recreation needs of people. A scale of five experience levels ranging from "primitive" to "highly developed" is planned for the National Forest System.

EXTRACTIVE USE Use of natural resources that removes them from their natural setting.

FAMILY UNIT A camp or picnic spot with table, fireplace, tent pad, and parking spot.

FEE SITE A Forest Service recreation area in which users must pay a fee. Fee sites must meet certain standards and provide certain facilities as specified in the Forest Service Manual.

FINAL CUT Removal of the last seed bearers or shelter trees after regeneration is considered to be established under a shelterwood system.

FLOOD PLAIN The lowland and relatively flat area adjoining inland waters, including at a minimum, that area subject to a 1 percent or greater chance of flooding in any given year.

FORAGE All browse and nonwoody plants available to livestock or wildlife for feed.

FORB Any herbaceous plant other than true grasses, sedges, or rushes.

FOREST AND RANGELAND RENEWABLE RESOURCES PLANNING ACT OF 1974 An act of Congress which requires the assessment of the Nation's renewable resources and the periodic development of a national renewable resources program. It also requires the development, maintenance, and, as appropriate, revision of land and resource management plans for units of the National Forest System (e.g. National Forest).

FOREST LAND Land at least 10 percent occupied by forest trees of any size or formerly having had such tree cover and not currently developed for nonforest use. Lands developed for nonforest use include areas for crops, improved pasture, residential, or administrative areas, improved constructed roads of any width, and adjoining road clearing and powerline clearing of any width. The term "occupied" when used to define forest land, will be measured by canopy cover of live forest trees at maturity. The minimum area for classification of forest land will be 1 acre or greater. Unimproved roads, trails, stream and clearings in forest areas are classified as forest if they are less than 120 feet in width.

FOREST LOCAL ROADS Roads constructed and maintained for, and frequented by, the activities of a given resource element. Some uses may be made by other element activities, but normally maintenance is not affected by such use. These roads connect terminal facilities with Forest collector or Forest arterial roads or public highways. The location and standard are usually determined by the requirement of a specific resource activity rather than by travel efficiency. Forest local roads may be developed and operated for constant or intermittent service, depending on land use and resource management objectives for the area served by the facility.

FOREST SUPERVISOR The official responsible for administering the National Forest System lands in a Forest Service Administrative Unit, which may consist of one or more National Forests or all the Forests within a State.

FOREST SYSTEM ROAD A road wholly or partly within or adjacent to and serving the National Forest System and which is necessary for the protection, administration, and utilization of the National Forest System and the use and developments of its resources.

FORPLAN A linear programing system used for developing and analyzing Forest planning alternatives.

FOREST-WIDE MANAGEMENT GUIDELINES An indication or outline of policy or conduct dealing with the basic management of the Forest. Forest-wide management guidelines apply to all areas of the Forest regardless of the other management prescriptions applied.

FSH Forest Service Handbook.

FSM Forest Service Manual.

FUEL BREAK A zone in which fuel quantity has been reduced or altered to provide a position for suppression forces to make a stand against wildfire. Fuel breaks are designated or constructed before the outbreak of a fire. Fuel breaks may consist of one or a combination of the following: Natural barriers, constructed fuelbreaks, manmade barriers.

FUELS Include living plants; dead, woody vegetative materials; and other vegetative materials which are capable of burning.

FUELS MANAGEMENT Manipulation or reduction of fuels to meet Forest protection and management objectives while preserving and enhancing environmental quality.

FUELS TREATMENT The rearrangement or disposal of natural or activity fuels to reduce the fire hazard.

FULL-SERVICE MANAGEMENT The administration, operation, and maintenance of developed recreation sites to established standards with the objective to provide a pleasant recreation experience for the visitor and exceed the minimum health and safety needs of the visitors.

GAME SPECIES Any species of wildlife or fish for which seasons and bag limits have been prescribed and which are normally harvested by hunters, trappers, and fisherman under State or Federal laws, codes, and regulations.

GEOGRAPHIC UNIT Specific areas of the Forest containing common physical, biological, and/or social characteristics. These units were determined by the Districts as manageable boundaries to work with.

GOAL A concise statement that describes a desired condition to be achieved. It is normally expressed in broad, general terms and is timeless in that it has no specific date by which it is to be completed. Goal statements form the principal basis from which objectives are developed.

GOODS AND SERVICES The various outputs, including onsite uses, produced by forest and rangeland renewable resources.

GRAZING ALLOTMENT See Range Allotment.

GROUP SELECTION CUTTING A cutting method to develop and maintain uneven-aged stands by the removal of small groups of trees to meet a predetermined goal of size distribution and species composition in remaining stands.

GROWING STOCK LEVEL A relative stand density measure used to guide a management objective such as maximizing timber volume yields or optimizing big-game thermal cover.

GUIDELINE See Standard and Guideline.

HABITAT The place where a organism lives, including the entire range of environmental conditions required for its survival.

HABITAT COMPONENT One segment of the range of environmental conditions of an organism's habitat. An avalanche path is a habitat component of a grizzly bear's habitat.

HABITAT TYPE An aggregation of all land areas potentially capable of producing similar plant communities at climax.

HABITAT TYPE GROUP A logical grouping of habitat types to facilitate resource planning and public presentations.

HIDING COVER Trees of sufficient size and density to conceal animals from view at 200 feet.

IMPACT ANALYSIS AREA The delineated area subject to significant economic and social impacts from Forest Service activities included in an economic or social mimpact analysis.

IMPROVEMENT CUTTING Removing trees of undesirable species, form, or condition from the main canopy in stands past the sapling stage to improve the composition and quality.

INDICATOR SPECIES Species identified in a planning process that are used to monitor the effects of planned management activities on viable populations of wildlife and fish, including those that are socially or economically important.

INDIRECT EFFECTS Secondary effects which occur in locations other than the initial action or significantly later in time.

INDIVIDUAL TREE SELECTION HARVEST A cutting method to develop and maintain uneven-age stands by the removal of selected trees from specified age classes over the entire stand area in order to meet a predetermined goal of age distribution and species in the remaining stand.

INDUSTRIAL WOOD All commercial roundwood products except fuelwood.

INSTREAM FLOWS The minmum water volume (cubic feet per second) in each stream necessary to meet seasonal streamflow requirements for maintaining aquatic ecosystems, visual quality, recreational opportunities, and other uses.

IN-MIGRATION The movement of human population into an area.

INTEGRATED PEST MANAGEMENT A process for selecting strategies to regulate forest pests in which all aspects of a pest-host system are studied and weighed. The information considered in selecting appropriate strategy includes the impact of the unregulated pest population on various resource values, alternative regulatory tactics and strategies, and benefit/cost estimates for these alternative strategies. Regulatory strategies are based on sound silvicultural practices and ecology of the pest-host system and consist of a combination of tactics such as timber stand improvement plus selective use of pesticides. A basic principle in the choice of strategy is that it be ecologically compatible or acceptable.

INTENSIVE GRAZING Grazing management that controls distribution of cattle and duration of use on the range, usually by fences, so parts of the range are rested during the growing season.

INTER-DISCIPLINARY TEAM (ID TEAM) A group of individuals with different training assembled to solve a problem or perform a task. The team is assembled out of recognition that no one scientific discipline is sufficiently broad to adequately solve the problem. Through interaction, participants bring different points of view to bear on the problem.

INTERMEDIATE HARVEST Any removal of trees from a stand between the time of its formation and the regeneration cut. Most commonly applied intermediate cuttings are release, thinning, improvement, and salvage.

INTERMITTENT STREAM A stream which flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow.

INTERPRETATIVE SERVICES Visitor information services designed to inform and educate Forest visitors improving their understanding, appreciation, and enjoyment of National Forest resources.

INVENTORY DATA Recorded measurements, facts, evidence, or observations on Forest resources such as soil, water, timber, wildlife, range, geology, minerals, and recreation which was used to determine the capability and opportunity of the Forest to be managed for those resources.

ISSUE See Public Issue.

"KEY REACHES" OF WATERSHED SYSTEM A representative stream segment that can be expected to be sensitive to water resource changes and which adequately reflects the effects of management of the stream channel, the water, and their beneficial uses.

KEY SUMMER RANGE An area that is potentially capable of supporting big game during the summer use period.

KEY WINTER RANGE The portion of the yearlong range where big game find food and/or RANGE cover during severe winter weather.

LAND EXCHANGE The conveyance of non-Federal land or interests to the United States in exchange for National Forest System land or interests in land.

LANDLINE LOCATION The legal identification, accurate location, and description of property boundaries.

LANDTYPE An inventory map unit with relatively uniform potential for a defined set of land uses. Properties of soils, landform, natural vegetation, and bedrock are commonly components of landtype delineation used to evaluate potentials and limitations for land use.

LANDTYPE GROUP A logical grouping of landtypes that facilitate resource planning.

LEASABLE MINERALS See Minerals, Leasable.

LEVEL I FIRE ANALYSIS General fire management analysis to provide historical information that assists the interdisciplinary team in the analysis of the management situation and formulation of alternatives for the Forest Plan.

LEVEL II FIRE ANALYSIS An analytical process which guides the implementation of fire management activities of the Forest Plan.

LINEAR PROGRAMMING A mathematical method used to determine the optimal distribution of limited resources between competing demands when both the objective (e.g., profit or cost) and the restrictions on its attainment are expressible as a system of linear equalities or inequalities (e.g., $y=a+bx$).

LIMITED SURFACE USE STIPULATION A mineral lease clause, which, if attached to a mineral lease, prohibits surface disturbing activities on the lease pending submission of a surface use and operations plan which is satisfactory to the BLM and the surface management agency for protection of special existing or planned uses.

This stipulation may, when site-specific operations are proposed and analyzed, be modified if other less stringent mitigation is determined to be sufficient to protect the other resources.

LOCAL DEPENDENT INDUSTRIES Local industries relying on National Forest outputs for economic activity.

LOCAL ROADS These roads connect terminal facilities with Forest collector or Forest arterial roads or public highways. The location and standard are usually determined by the requirement of a specific resource activity rather than by travel efficiency. Forest local roads may be developed and operated for constant or intermittent service depending on land use and resource management objectives for the area served by the facility.

LOCATABLE MINERALS See Minerals locatable.

LOESS A uniform and unstratified fine sand or silt transported by wind.

LONG-TERM SUSTAINED YIELD CAPACITY (LTSY) The highest uniform wood yield from lands being managed for timber production that may be sustained under a specified intensity of management consistent with multiple use objectives

LOW IMPACT Low impact use is use of an area with a minimum of physical and social disturbance to the natural environmental and where, at the end of the use period, minimal evidence remains of human activity.

M Thousand

MM Million

MAUM Thousand Animal Unit Months.

MBF Thousand Board Feet

MMBF Million Board feet

MMCF Million Cubic feet

MANAGEMENT ACTION Any activity undertaken as part of the administration of the Forest.

MANAGEMENT AREA An aggregation of capability areas which have common management direction and may be noncontiguous in the Forest. Consists of a grouping of capability areas selected through evaluation procedures and used to locate decisions and resolve issues and concerns.

MANAGEMENT CONCERN An issue, problem, or a condition which constrains the range of management practices identified by the Forest Service in the planning process.

MANAGEMENT DIRECTION A statement of multiple-use and other goals and objectives, the associated management prescriptions, and standards and guidelines for attaining them.

MANAGEMENT EFFECTS Physical, biological, social, and economic responses to management practices.

MANAGEMENT EMPHASIS A management practice or combination of management practices designed to stress production of a particular type of output or mix of outputs.

MANAGEMENT INTENSITY A management practice or combination of management practices and associated costs designed to obtain different levels of goods and services.

MANAGEMENT OPPORTUNITY A statement of general actions, measures, or treatments that address a public issue or management concern.

MANAGEMENT PRACTICE A specific activity, measure, course of action, or treatment. Proposed management practices are those scheduled in the first decade of Forest Plan implementation. Probable management practices are those scheduled in the second decade of Forest Plan implementation.

MANAGEMENT PRESCRIPTION Management practices and intensities selected and scheduled for application on a specific area to attain multiple use and other goals and objectives.

MANAGEMENT STANDARDS AND GUIDELINES See Standard and Guideline.

MARKET VALUE The unit price of an output normally exchanged in a market after at least one stage of production, expressed in terms of what people are willing to pay as evidenced by market transactions.

MATURE TIMBER Individual trees or stands of trees that in general are at their maximum rate in terms of the physiological processes expressed as height, diameter, and volume growth.

MAXIMUM RESOURCE POTENTIAL The maximum possible output of a given resource limited only by its inherent physical and biological characteristics.

MEAN ANNUAL INCREMENT The total volume increase in a tree or stand of trees up to a given age, divided by that age.

MINERAL ENTRY The filing of a mining claim on Federal land to obtain the right to mine any locatable minerals it may contain. Also the filing for a millsite on Federal land for the purpose of processing off-site locatable minerals.

MINERAL WITHDRAWAL A formal designation by the Secretary of the Interior which precludes entry or disposal of mineral commodities under the mining and/or mineral leasing laws.

MINERAL EXPLORATION The search for valuable minerals.

MINERAL PRODUCTION The extraction of mineral deposits.

MINERALS, COMMON VARIETY Deposits of sand, stone, gravel, etc., of widespread occurrence and not having distinct or special value. These deposits are used generally for construction and decorative purposes and are disposed of under the Materials Act of 1947.

MINERALS, LEASABLE Those minerals which are disposed of under authority of the various mineral leasing acts. Minerals include coal, oil, gas, phosphate, sodium, potassium, oil shale, sulfur (in Louisiana and New Mexico), and geothermal steam.

MINERALS, LOCATABLE Those minerals which are disposed of under the general mining laws. Included are minerals such as gold, silver, lead, zinc, and copper which are not classed as leasable or salable.

MINIMUM MANAGEMENT REQUIREMENTS Standards for resource protection, vegetative manipulation, silviculturist practices, even-aged management, riparian areas, soilm and water and diversity, to be met in accomplishing National Forest System goals and objectives (see 36 CFR 219.27).

MINIMUM RESOURCE STANDARDS Specific conditions of individual resources which must be maintained in order to meet minimum management requirements (36 CFR 219.27) and/or other legal requirements.

MINIMUM VIABLE See Viable Population.

MINING CLAIMS A geographic area of the public lands held under the general mining laws in which the right of exclusive possession is vested in the locator of a valuable mineral deposit. Includes lode claims, placer claims, millsites, and tunnel sites.

MITIGATE To lessen the severity.

MITIGATION Avoiding or minimizing impacts by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact by preservation and maintenance operations during the life of the action.

MODIFICATION (VQO) See Visual Quality Objective (VQO).

MONITORING AND EVALUATION The periodic evaluation on a sample basis of Forest Plan management practices to determine how well objectives have been met and how closely management standards have been applied.

MONTANA WILDERNESS STUDY ACT AREAS Those areas that are required to be studied for their wilderness suitability under the Montana Wilderness Study Act of 1977 (Public Law 95-150).

MOUNTAIN PINE BEETLE A species of bark beetle that spends the major portion of its life cycle in a tree's cambium layer. Through a combination of the insect feeding on the cambium layer and the introduction of fungi which stop the resin flow, the tree is girdled and killed.

MULTIPLE USE The management of all the various renewable surface resources of the National Forest System so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some lands will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) An act which encourages productive and enjoyable harmony between man and his environment; promotes efforts to prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; enriches the understanding of the ecological systems and natural resources important to the Nation; and establishes a Council on Environmental Quality.

NATIONAL FOREST LANDSCAPE MANAGEMENT ACT (NFMA) The planning and design of the visual aspects of multiple-use land management in such ways that the visual effects maintain or upgrade man's psychological welfare.

NATIONAL FOREST MANAGEMENT ACT (NFMA) A law passed in 1976 as amendment to the Forest and Range land Renewable Resources Planning Act that requires the preparation of Regional and Forest plans and the preparation of regulations to guide that development.

NATIONAL FOREST SYSTEM All National Forest lands reserved or withdrawn from the public domain of the United States; all National Forest lands acquired through purchase, exchange, donation, or other means; the National Grasslands and Land Utilization Projects administered under Title III.

NATIONAL RECREATION TRAILS Trails designated by the Secretary of the Interior or the Secretary of Agriculture as part of the National system of trails authorized by the National Trails System Act. National recreation trails provide a variety of outdoor recreation uses.

NATIONAL REGISTER OF HISTORIC PLACES A listing maintained by the National Park Service of areas which have been designated as being of historical significance. The Register includes places of local and State significance as well as those of value to the Nation as a whole.

NATIONAL WILD AND SCENIC RIVER SYSTEM Rivers with outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values designated by Congress under the Wild and Scenic Rivers Act for preservation of their free-flowing condition.

NATIONAL WILDERNESS PRESERVATION SYSTEM All lands covered by the Wilderness Act and subsequent wilderness designations, irrespective of the department or agency having jurisdiction.

NEPA See National Environmental Policy Act.

NFMA See National Forest Management Act.

NET PUBLIC BENEFITS An expression used to signify the overall long-term value to the Nation of all outputs and positive effects (benefits) less all associated inputs and negative effects (costs) whether they can be quantitatively valued or not. Net public benefits are measured by both quantitative and qualitative criteria rather than a single measure or index. The maximization of net public benefits to be derived from management of units of the National Forest System is consistent with the principles of multiple use and sustained yield.

NO ACTION ALTERNATIVE The management direction, activities, outputs, and effects most likely to exist in the future if the current plan would continue unchanged.

NONCHARGEABLE VOLUME All volume that is not included in the growth and yield projections for the selected management prescriptions used to arrive at the allowable sale quantity. It also includes all volume removed from nonsuitable lands.

NONCOMMODITY OUTPUTS See Output, Nonmarket.

NONCONSUMPTIVE USE Those uses of resources that do not reduce the supply. Nonconsumptive uses of water include hydroelectric power generation, boating, swimming, etc.

NONDECLINING FLOW The principle that the quantity of timber planned for sale or harvest for any future decade must be equal to or greater than the planned sale and harvest for the preceding decade, and this planned sale and harvest for any decade is not greater than the long-term sustained yield capacity.

NONDECLINING YIELD See Nondeclining Flow.

NONEXTRACTIVE USE Use which does not remove a resource from its natural setting.

NONGAME Species of animals which are not managed as a sport hunting resource.

NONPOINT SOURCE POLLUTION Sources from which the pollutants discharged are: (1) induced by natural processes, including precipitation, seepage, percolation, and runoff; (2) not traceable to any discrete or identifiable facility; and (3) better controlled through the utilization of Best Management Practices, including process and planning techniques. This includes natural pollution sources not directly or indirectly caused by man.

NONPRICE OUTPUTS See Output, Nonmarket.

NONSTOCKED A stand of trees or aggregation of stands that has a stocking level below the minimum specified for meeting the prescribed management objectives.

NO-SURFACE OCCUPANCY STIPULATION A mineral lease clause which, if attached to a mineral lease, prohibits the lessee from constructing roads, well pads, or otherwise occupying the land surface unless, upon site-specific review, it is determined by the authorized officer that the requirements of the stipulation can be modified if other less stringent mitigation is determined to be sufficient to protect the other resources.

OBJECTIVE A concise time-specific statement of measurable planned results that respond to pre-established goals. An objective forms the basis for further planning, to define the precise steps to be taken and the resources to be used in achieving identified goals.

OBJECTIVE FUNCTION A term used in linear programming describing the criteria to be optimized. Examples of objective functions are: maximize present net value, minimize cost or maximize timber.

OFF-ROAD VEHICLE Any vehicle capable of being operated off an established road or trail; e.g., motorbikes, four-wheel drives, and snowmobiles.

OLD GROWTH DEPENDENT SPECIES The group of wildlife species that is associated with old-growth forest plan communities.

OLD GROWTH HABITAT A community of forest vegetation which has reached a late stage of plant succession characterized by a diverse stand structure and composition, along with a significant showing of decadence. The stand structure will have multistoried crown heights and variable crown densities. There is a variety of tree sizes and ages ranging from small groups of seedlings and saplings to trees of large diameters exhibiting a wide range of defect and breakage both live and dead, standing and down. The time it takes for a forest stand to develop into old growth condition depends on many local variables such as forest type, habitat type, and climate. Natural chance events involving forces of nature such as weather, insect, disease, fire, and the actions of man also affect the rate of development of old growth stand conditions.

OLD GROWTH TIMBER See Overmature Timber.

OPERATIONS PLAN See Plan of Operation.

OPPORTUNITY COST An opportunity cost is value foregone. In this analysis it is a cost calculated as the difference between present net value of the alternative and the present net value of the maximum PNV increment.

OPTIMUM The greatest level of production that is consistent with other resource requirements as constrained by environmental, social, and economically sound conditions.

OUTPUT A good, service, or on-site use that is produced from forest and rangeland resources. Forest and rangeland output definitions, codes, and units measure are contained in the Management Information Handbook (FSH 1309.11). Examples are: X06-Softwood Sawtimber Production - MBF; X80-Increased Water Yield - Acre Feet; W01-Primitive Recreation Use - RVD's.

OUTPUT, CONTROLLED The amount of an output which management has the legal and practical ability to control with management activities.

OUTPUT, DIRECT An output that fulfills specified objectives of the policy, program, or project being evaluated.

OUTPUT, INDUCED A good, service, or on-site use which is incidental to the objectives of the resource activity. An example is the timber harvest activity which produces a primary output of board feet of timber and an induced output of acres of improved wildlife habitat because of the harvest activity.

OUTPUT, MARKET A good, service, or on-site use that can be purchased at a price.

OUTPUT, NONCONTROLLED The amount of an output which will occur regardless of management activity.

OUTPUT, NONMARKET A good, service, or on-site use not normally exchanged in a market.

OUTPUT, PRIMARY A good, service, or on-site use that results from the completion of an activity, project or program that meets the specific objectives of the resource. Examples are board feet of timber, recreation visitor days, etc.

OVER-THE-COUNTER SALE The selling of Forest products without bidding, as requested by the general public, usually for products such as fuelwood, corral poles, ornamental shrubs, etc.

OVERMATURE TIMBER Individual trees or stands of trees that in general are past their maximum rate in terms of the physiological processes expressed as height, diameter, and volume growth.

OVERSTORY That uppermost canopy of the forest when there is more than one level of vegetation.

OVERTHRUST BELT A complex geologic feature, extending from Alaska to Mexico, which resulted from compressional stresses within the earth, and which is characterized by abundant thrust faults. This zone passes through and includes all of western Montana.

PARTIAL RETENTION (VQO) See Visual Quality Objective (VQO).

PARTICULATES Small particles suspended in the air and generally considered pollutants.

PATENTED MINING CLAIMS A patent is a document which conveys title to land. When patented, a mining claim becomes private property and is land over which the United States has no property rights, except as may be reserved in the patent. After a mining claim is patented, the owner does not have to comply with requirements of the General Mining Law or implementing regulations.

PERENNIAL STREAMS Streams that flow continuously throughout most years.

PAYMENT IN LIEU OF TAXES Payments on a fiscal year basis to each unit of local government in which entitlement lands (lands owned by the United States) are located and not directly dependent on production of outputs or receipt sharing. Specifically, they include payments made under the Payments in Lieu of Taxes Act of 1976 by the U.S. Department of the Interior.

PERMITTED GRAZING Use of a National Forest range allotment under the terms of a grazing permit.

PERSON YEAR (WORK YEAR) A person year equals 2,087 hours of work time. A person year may be one person working yearlong or several persons filling seasonal positions.

PLAN OF OPERATIONS A written plan describing mining and mineral processing activities that will likely cause a significant surface disturbance. The plan is prepared by those engaged in activities, such as prospecting, exploration, or mining in the National Forest. This plan must be approved by a Forest Officer.

PLANNING AREA The area of the National Forest System covered by a Regional or Forest Plan.

PLANNING CRITERIA Standards, tests, rules, and guidelines by which the planning process is conducted and upon which judgments and decisions are based.

PLANNING HORIZON The overall time period considered in the planning process that spans all activities covered in the analysis or plan and all future conditions and effects of proposed actions which would influence the planning decisions. In the National Forest planning process, this is 150 years.

PLANNING PERIOD A time interval for which inputs and outputs are identified in a planning process. Current RPA and National Forest Plan intervals are 5 and 10 years, respectively.

PLANNING RECORDS Documents and files that contain detailed information and decisions made in developing the Forest Plan. Records are available at the Forest Supervisor's Office.

PNV See Present Net Value.

POLETIMBER TREES Live trees of commercial species at least 5 inches in diameter at breast height, but smaller than sawtimber size, and of good form and vigor.

POLICY A guiding principle upon which a specific decision or set of decisions are based.

POTENTIALLY (TENTATIVELY) SUITABLE LAND National Forest System land (as defined in CFR 219.3) for which technology is available that ensures timber production without irreversible resource damage to soils, productivity, or watershed conditions; for which there is reasonable assurance that such lands can be restocked (CFR 219.14); and which is available for timber management.

PRACTICE See Management Practice.

PRECAMBRIAN Period of geologic time extending from more than 3,600 years to about 570 million years ago.

PRECOMMERCIAL THINNING The selective felling, deadening, or removal of trees in a young stand primarily to accelerate diameter increment on the remaining stems, maintain a specific stocking or stand density range, and improve the vigor and quality of the trees that remain.

PREDATOR One that preys, destroys, or devours - usually an animal that lives by preying on other animals.

PREFERRED ACTION The alternative recommended for implementation by the responsible official from the range of alternatives studied in a Draft Environmental Impact Statement or Assessment under requirements of the 1979 National Environmental Policy Act.

PREPARATORY CUT Removal of trees near the end of a rotation so as to permanently open the canopy and enlarge the crowns of seed bearers, with the intent of improving conditions for seed production and natural generation, typical in shelterwood systems.

PRESCRIBED BURNING The intentional application of fire to wildland fuels in either their natural or modified state under such conditions that allow the fire to be confined to a predetermined area and at the same time to produce the intensity of heat and rate of spread required to further certain planned objectives (i.e., silviculture, wildlife management, etc.).

PRESCRIBED FIRE A fire burning under specified conditions which will accomplish planned objectives in strict compliance with an approved plan, and the conditions under which the burning takes place and the expected results are specific, predictable, and measurable.

PRESCRIPTION See Management Prescription.

PRESENT NET VALUE (PNV) The difference between the discounted value (benefits) of all outputs to which monetary value or established market prices are assigned and the total discounted costs of managing the planning area.

PRESENT NET WORTH The discounted value of price times quantity less cost.

PRESERVATION (VQO) See Visual Quality Objectives (VQO).

PRESUPPRESSION Activities required in advance of fire occurrence to ensure effective suppression action. Includes (1) recruiting and training fire forces; (2) planning and organizing attack methods; (3) procuring and maintaining fire equipment; and (4) maintaining structural improvements necessary for the fire program.

PREVENTION OF SIGNIFICANT DETERIORATION OF AIR QUALITY (PSD) A classification established to preserve, protect, and enhance the air quality in National Wilderness Preservation System areas in existence prior to August 1977 and other areas of National significance, while ensuring economic growth can occur in a manner consistent with the preservation of existing clean air resources. Specific emission limitations and other measures, by class, are detailed in the Clean Air Act (42 U.S.C. 1875 et 15q.).

PRICED OUTPUTS Resource outputs that have market or assigned dollar values.

PRIMITIVE RECREATION SETTING A classification of the recreation opportunity spectrum that characterizes an essentially unmodified natural environment of a size or remoteness that provide significant opportunity for isolation from the signs and sounds of man and a feeling of vastness of scale. Visitors have opportunity to be part of the natural environment, encounter a high degree of challenge, and use a maximum of outdoor skills but have minimum opportunity for social interaction.

PRIMITIVE ROADS Roads that came into existence with little regard for grade or drainage control, or were abandoned facilities from some prior use. They are sometimes created merely by repeated driving over an area. Such roads are rarely, if ever, maintained and then only by users. These roads are single lane, usually with native surfacing, and sometimes passable with four-wheel drive vehicles only, especially in wet weather.

PRIMITIVE SETTING A large area (generally at least 5,000 acres) at least 3 miles from all roads, railroads, or trails with motorized use. The area is essentially a natural environment unmodified by man.

PRODUCTION POTENTIAL The capability of the land or water to produce life-sustaining features (forage, cover, aquatics).

PRODUCTIVITY See Site Productivity.

PROGRAM DEVELOPMENT AND BUDGETING The process by which activities for the Forest are proposed and funded.

PROPOSED ACTION In terms of the National Environmental Policy Act, the project, activity, or action that a Federal agency intends to implement or undertake and which is the subject of an environmental analysis.

PRUNING The removal of live or dead branches from standing trees.

PUBLIC ACCESS Usually refers to a road or trail route over which a public agency claims a right-of-way available for public use.

PUBLIC INVOLVEMENT A Forest Service process designed to broaden the information base upon which agency decisions are made by (1) Informing the public about Forest Service activities, plans, and decisions, and (2) Encouraging public understanding about and participation in the planning processes which lead to final decision making.

PUBLIC ISSUE A subject or question of widespread public interest identified through public participation relating to management of National Forest System lands.

RANGE ALLOTMENT A designated area of land available for livestock grazing upon which a specified number and kind of livestock may be grazed under a range allotment management plan. It is the basic land unit used to facilitate management of the range resource on National Forest System and associated lands administered by the Forest Service.

RANGE, TRANSITORY See Transitory Range.

RANGELAND Land on which the climax vegetation (potential natural plant community) is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing and browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundra, and certain forb and shrub communities. It also includes areas seeded to native or adapted introduced species that are managed like native vegetation.

RANGER DISTRICT Administrative subdivision of the Forest supervised by a District Ranger.

RARE II See Roadless Area Review and Evaluation II.

REAL DOLLAR A monetary value that compensates for inflation.

RECEIPTS Money collected from timber stumpage, livestock grazing, campgrounds, special-use permits, and oil and gas lease rentals and royalties, and returned to the Federal treasury.

RECORD OF DECISION A document separate from but associated with an environmental impact statement that publicly and officially discloses the responsible official's decision on the proposed action.

RECREATION CAPACITY The number of people that can take advantage of a recreation opportunity at any one time without substantially diminishing the quality of the experience sought after.

RECREATION EXPERIENCE LEVEL A concept used in recreation management to delineate the range of opportunities for satisfying basic recreation needs of people. A scale of five experience levels ranging from "primitive" to "highly developed" is planned for the National Forest System.

RECREATION INFORMATION MANAGEMENT (RIM) The Forest Service system for recording recreation facility condition and use.

RECREATION LIVESTOCK USE The use of an area by animals, such as horses and mules, which are used primarily in conjunction with recreation activities.

RECREATION MANAGEMENT AREA An area of several thousand acres in which the management emphasis is on recreation and in which direction is given to establish a Recreation Area Management Plan.

RECREATION OPPORTUNITIES The combination of recreation settings, activities, and experiences provided by the Forest.

RECREATION OPPORTUNITY GUIDE A catalogue describing the recreation activities available on a particular Ranger District.

RECREATION OPPORTUNITY SPECTRUM (ROS) A system for planning and managing recreation resources that recognizes recreation activity opportunities, recreation settings, and recreation experiences along a spectrum or continuum.

RECREATION PREFERENCE TYPE (RPT) A term used to indicate the types of recreation experiences sought after by Forest users. They are overlapping portions of the total recreation preferences spectrum that the public may express demands for.

RPT I. Orientations toward using natural, unmodified environment for the appreciation and understanding of natural phenomena; as a source of intellectual and/or physical challenges; for seeking solitude; and for esthetic stimulations.

RPT II. Orientations toward using natural or semiprimitive environment in searching for and extraction of indigenous fish and/or game species, rocks, minerals, edible plants, etc., and for enjoyment of the physical surroundings in which such extractable objects are found.

RPT III. Orientations toward using semiprimitive, lightly developed areas for relaxing in natural surroundings; as a source of tranquility and freedom from tension; and for esthetic stimulation.

RPT IV. Orientations toward using moderately developed areas and surrounding environment for intentional social interaction and group learning experiences.

RPT V. Orientations toward using highly developed areas for social interactions with many other people and for pursuits which allow for the expression of learned physical abilities.

RECREATION RESIDENCE A house or cabin on National Forest land for seasonal recreational use that is not the primary residence of the owner.

RECREATION TYPES Developed Recreation - The type of recreation that occurs where modifications (improvements) enhance recreation opportunities and accommodate intensive recreation activities in a defined area.

DISPERSED RECREATION - That type of recreation use related to and in conjunction with roads and trails that requires few if any improvements and may occur over a wide area. Activities tend to be day-use oriented and include hunting, fishing, berrypicking, off-road vehicle use, hiking, horseback riding, picniking, camping, viewing scenery, snowmobiling, and many others.

RECREATION VISITOR DAY (RVD) One visitor day equals 12 hours (one person for 12 hours, or 12 people for 1 hour, or any combination thereof).

REDUCED SERVICE MANAGEMENT The administration, operation and maintenance of developed recreation sites to established standards with the objective to meet minimum health and safety needs of the visitor and keep the site open to public use.

REFORESTATION The renewal of forest cover by seeding, planting, and natural means.

REGENERATION The renewal of a tree crop, whether by natural or artificial means. This term may also refer to the crop itself.

REGIONAL FORESTER The official responsible for administering a single Region of the Forest Service.

REGIONAL GUIDE A document developed to meet the requirements of the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended, that guides all natural resource management activities and established management standards and guidelines for National Forest System lands of a given Region to the Forests within a given Region. It also disaggregates the RPA objectives assigned to the Region to the Forests within that Region.

REGIONAL LAND AND RESOURCE MANAGEMENT PLAN The plan developed to meet the requirements of the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended, that guides all natural resource management activities and established management standards and guidelines for the National Forest System lands of a given Region. It also disaggregates the RPA objectives assigned to the Region to the Forests within that Region.

REGULATED The commercial forest land that is organized for timber production under the principle of sustained yield. The harvest of timber from this land is regulated to achieve multiple long-range objectives, such as maintaining setting for recreational activities, rotating forage production areas and wildlife habitat, increasing water production yield, and increasing the growth and utilization of timber for the Nation's supply.

REGULATIONS Refers to the Code of Federal Regulations for implementing the National Forest Management Act, 36 CFR, Part 219.

RENEWABLE RESOURCES Resources that are possible to use indefinitely, when the use rate does not exceed the ability to renew the supply. In the RPA program, the term is used to describe those matters within the scope of responsibilities and authorities of the Forest Service as required by the Forest and Rangeland Renewable Resouces Planning Act of 1974. The renewable resources include: timber, range, minerals, wildlife and fish, water, recreation, and wilderness.

RENEWABLE RESOURCES ASSESSMENT An appraisal of the Nation's renewable resources that recognizes their vital importance and the necessity for long-term planning and associated program development. The Assessment meets the requirements of Section 3 of the Forest and Rangeland Renewable Resources Planning Act and includes analysis of present and anticipated uses, demands, and supplies of the renewable resources; a description of Forest Service programs and responsibilities; and a discussion of policy considerations, laws, and regulations.

RENEWABLE RESOURCES PROGRAM The program for management and administration of the National Forest Service System, for Research, for Cooperative State and Private Forest Service programs, and for conduct of other Forest Service activities in accordance with Section 4 of the Forest and Rangeland Renewable Resources Planning Act.

RESOURCE DESIGNATION MODEL A mathematical model using linear programing which will assign prescriptions to land areas and schedule implementation of those prescriptions simultaneously. The end purpose of the model is to find a schedule and prescription assignment that meets the goals of the Forest and optimizes some objective function such as "maximize PNV."

RESOURCE ELEMENT (SUPPORT ELEMENT) A collection of activities from the various operating programs required to accomplish the Forest Sevice mission and which fulfill statutory or Executive requirements. There are seven resource elements: Recreation, Wilderness, Wildlife and Fish, Range, Timber, Water, and Minerals.

RESEARCH NATURAL AREA An area in as near a natural condition as possible, which exemplifies typical or unique vegetation and associated biotic, soil, geologic, and acquatic features. The area is set aside to preserve a representative sample of an ecological community primarily for scientific and educational purposes; commercial and general public use is not allowed.

RETENTION (VQO) See Visual Quality Objectives (VQO).

RIGHT-OF-WAY Land authorized to be used or occupied for the construction, operation, maintenance, and termination of a project facility passing over, upon, under, or through such land.

RIPARIAN AREAS Areas with distinctive resource values and characteristics that are comprised of an aquatic ecosystem and adjacent upland areas that have direct relationships with the aquatic system. This includes flood plains, wetlands, and all areas within a horizontal distance of approximately 100 feet from the normal high waterline of a stream channel, or from the shoreline of a standing body of water.

RIPARIAN ECOSYSTEM A transition between the aquatic ecosystem and the adjacent upland terrestrial ecosystem. It is identified by soil characteristics and by distinctive vegetative communities that require free or unbounded water.

ROAD CREDITS Credits earned by timber purchasers and which are applied toward the sale price of timber in exchange for building the roads needed for access.

ROAD MAINTENANCE LEVELS Road maintenance levels are as follows:

Level 1: Basic custodial care as required to protect the road investment and to see that damage to adjacent land and resources is held to a minimum. The road is not normally open to traffic.

Level 2: Same basic maintenance as Level 1 plus logging out, brushing out, and restoring the road prism as neccessary to provide passage. Route markers and regulation signs are in place and useable. Road is open for limited passage of traffic, which is usually administrative use, permitted use, and/or specialized traffic.

Level 3: Road is maintained for safe and moderately convenient travel suitable for passenger cars. Road is open for public travel, but has low traffic volumes except during short periods of time (e.g. hunting season).

Level 4: At this level, more consideration is given to the comfort of the user. Road is usually surfaced with aggregate or is paved and is open for public travel.

Level 5: Safety and comfort are important considerations for these roads which are open to public traffic and generally receive fairly heavy use (100 average daily traffic or more). Roads have an aggregate surface or are paved.

ROAD MANAGEMENT The combination of both traffic and maintenance management operations. Traffic management is the continuous process of analyzing, controlling and regulating uses to accomplish National Forest objectives. Maintenance management is the perpetuation of the transportation facility to serve intended management objectives.

ROADED NATURAL-APPEARING RECREATION SETTING A classification on the recreation opportunity spectrum where timber harvest or other surface use practices are evident. Motorized vehicles are permitted on all or parts of the road system.

ROADLESS AREA A National Forest area which (1) is larger than 5,000 acres or, if smaller than 5,000 acres, contiguous to a designated wilderness or primitive area; (2) contains no roads, and (3) has been inventoried by the Forest Service for possible inclusion in the wilderness preservation system.

ROADLESS AREA REVIEW AND EVALUATION (RARE) II A comprehensive process, instituted in June 1977, to identify roadless and undeveloped land areas in the National Forest System and to develop alternatives for both wilderness and other resource management.

ROTATION The planned number of years between the formation or generation of trees and their harvest at a specified stage of maturity.

ROUNDWOOD The volume of logs or other round products required to produce lumber, plywood, woodpulp, paper, or other similar products.
RPA See Forest and Rangeland Renewable Resources Planning Act of 1974

RURAL RECREATION SETTING A classification on the recreation opportunity spectrum that is characterized by substantially modified natural environment. Resource modification and utilization practices are to enhance specific recreation activities and to maintain vegetative cover and soil. Sights and sounds of humans are readily evident, and the interaction between users is often moderate to high.

SALE SCHEDULE See Base Sale Schedule.

SALVAGE HARVEST The cutting of trees that are dead, dying, or deteriorating (e.g., because they are overmature or materially damaged by fire, wind, insects, fungi, or other injurious agencies) before they lose their commercial value as sawtimber.

SANITATION HARVEST The removal of dead, damaged, or susceptible trees, essentially to prevent the spread of pests or pathogens and so promote forest hygiene.

SAWTIMBER Trees containing at least one 12-foot sawlog or two noncontiguous 8-foot logs and meeting regional specifications for freedom from defect. Softwood trees must be at least 9 inches in diameter and hardwood trees 11 inches in diameter at breast height.

SCENIC EASEMENT A legal interest in the land of another which allows the easement holder specified uses or rights without actual ownership of the land; in this case, control of the use of land adjacent to public highways, parks, and rivers. It may provide something attractive to look at within the easement area, an open area to look through to see something attractive beyond the easement itself, or a screen to block out an unsightly view beyond the easement area.

SCOPING PROCESS An early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to the proposed action. Identifying the significant environmental issues deserving of study and deemphasizing insignificant issues, narrowing the scope of the environmental impact statement accordingly. (Ref. CEQ regulations, 40 CFR 1501.7).

SEDIMENT Solid material, both mineral and organic, that is in suspension, being transported, or has been moved from its site of origin by air, water, gravity, or ice.

SEED TREE CUTTING The removal in one cut of most of the mature trees from an area, leaving only a small number of desirable trees to provide seed for regeneration.

SEEDLING/SAPLING A size category for forest stands in which trees less than 5 in. in diameter are the predominant vegetation.

SEISMIC EXPLORATION Seismic exploration is used to map underground geological features to obtain information on the earth's subsurface and to locate areas where accumulations of oil and gas might occur. Seimic waves, generated at or near the surface, penetrate the earth's crust and reflect from subsurface rock layers back to the surface. The geophysicist receives a printed record or seismograph from which is measured the depth to various strata and from which subsurface structures with a potential for oil and gas accumulation can be determined such as faults, anticlines, and folds. There are three primary methods of seismic exploration:

Portable - Where access limitations, topography, or other restraints prevent use of trucks, portable operations can be performed. Two portable techniques exist for collecting data. These are:

(1) Surface charge programs involve the detonation of a series of as much as 50 to 100 pounds of explosives at shot points located at intervals along the seismic line. Surface charges can be placed directly on the ground, on snow, or on a variety of stakes or platforms. All necessary equipment to conduct the operation is transported by helicopters and then conveyed by foot travel.

(2) Various kinds of portable drills can be backpacked or delivered by helicopter to the area. A shallow subsurface portable program would involve drilling a pattern of approximately 16 holes about 4 inches in diameter up to 50 feet deep per mile of line. At this depth, a 10- to 40-pound charge of explosive is placed and detonated. Recording cables and geophones are laid out by foot travel.

With both of these portable techniques, shock waves generated by detonation are received and transmitted via geophones and cable to a recording device. Portable methods are generally used on the Forest.

Conventional - The conventional method of collecting seismic data includes the use of truck-mounted drills and vehicle-supported crews and generally involves off-road travel. This technique involves drilling 5 to 18 5-inch diameter holes per mile to a depth of 180 to 200 feet. At this depth, a 10- to 100-pound explosive charge is placed and detonated. Shock waves are received and transmitted via geophones and cable to a truck-mounted recording device. Due to terrain restrictions, this method has limited application on the Forest.

Vibroseis - The vibroseis technique involves using truck-mounted hydraulic pads which generate energy waves through vibration rather than explosives. The vibrator method typically consists of four large trucks each equipped with a vibrator (a steel slab weighing about 3 tons) mounted between the front and back wheels. The vibrator pads (about 4 feet square) are lowered to the ground and vibrators on all trucks are triggered electronically from the recorder truck. Energy waves are received and transmitted via cable and geophones to a recorder truck. After the information is recorded, the trucks move forward a short distance and the process is repeated. The vibroseis operation is usually limited to roads and gentle terrain.

SELECTION CUTTING The annual or periodic removal of trees as part of an uneven-age silvicultural system. Cutting can involve individual trees or small groups of trees to meet a predetermined goal of size and species composition in the remaining stand.

SEMIPRIMITIVE RECREATION SETTING A classification on the recreation opportunity spectrum that characterizes a predominately natural or natural-appearing environment of a moderate to large size. Concentration of users is low, but there is often evidence of other area users. The area is managed in such a way that minimum onsite controls and restrictions may be present, but are subtle.

SENSITIVE SPECIES Those plant or animal species which are susceptible or vulnerable to activity impacts or habitat alterations.

SEQUENTIAL BOUNDS A set of constraints used in linear program models to establish the relationship of the quantity of an output to preceding and succeeding quantities of that output (e.g. the forage production in one time period cannot increase or decrease over 10 percent from the forage production of the previous time period).

SERAL A biotic community which is developmental; a transitory stage in an ecologic succession.

SHELTERWOOD CUTTING The removal of a stand of trees through a series of cuttings designed to establish a new crop with seed and protection provided by a portion of the stand.

SILVICULTURAL EXAMINATION The process used to gather the detailed in-place field data needed to determine management opportunities and direction for the timber resource within a small subdivision of a forest area such as a stand.

SILVICULTURAL SYSTEMS A management process whereby forests are tended, harvested, and replaced, resulting in a forest of distinctive form. It includes all cultural management practices performed during the life of the stand such as regeneration cutting, fertilization thinning, improvement cutting, and use of genetically improved tree seeds and seedlings to achieve multiple resource benefits. Systems are classified according to the method of carrying out the fellings that remove the mature crop and provide for regeneration and according to the type of Forest they produce.

SITE PREPARATION A general term for a variety of activities that remove competing vegetation, slash, and other debris that may inhibit the reforestation effort.
SITE PRODUCTIVITY Production capability of specific areas of land.

SLASH The residue left on the ground after felling and other silvicultural operations and/or accumulating there as a result of storm, fire, girdling, or poisoning of trees.

SMALL GAME Birds and small mammals normally hunted or trapped.

SNAG A standing dead tree usually greater than 5 feet in height and 6 inches in diameter at breast height.

SOCIAL ORGANIZATION The structure of a society described in terms of institutions, community cohesion, and community stability.

SOCIAL VARIABLE A variable that measures the social impact of Forest Service management alternatives. Examples include population statistics, types of institutions, and personal opinion as reflected in attitudes or as demonstrated by behavior.

SOIL PRODUCTIVITY The capacity of a soil to produce a specific crop such as fiber and forage, under defined levels of management. It is generally dependent on available soil moisture and nutrients and length of growing season.

SPECIAL-USE PERMIT A permit issued under established laws and regulations to an individual, organization, or company for occupancy or use of National Forest System land for some special purpose.

STAGNATION A condition where plant growth is markedly reduced or even arrested through competition, state of the soil, or disease.

STAND A community of trees or other vegetative growth occupying a specific area and sufficiently uniform in composition (species), age, spatial arrangement, and conditions as to be distinguishable from the other growth on adjoining lands, so forming a silvicultural or management entity.

STANDARD AND GUIDELINE An indication or outline of policy or conduct.

STIPULATIONS Requirements that are part of the terms of a mineral lease. Some stipulations are standard on all Federal leases. Other stipulations may be applied to the lease at the discretion of the surface management agency to protect valuable surface resources and uses.

STOCKING A measure of timber stand density as it relates to the optium or desired density to achieve a given management objective.

STREAM ORDER A measure of the position of a stream in the hierarchy of tributaries. (Stream as referenced here refers to perenniel streams.)

(1) First-order streams are unbranched streams, that is they have no tributaries.

(2) Second-order streams are formed by the confluence of two or more first-order streams. They are considered second-order until they join another second-order or larger stream.

(3) Third-order streams are formed by the confluence of two or more second-order streams. They are considered third-order until they join another third-order or larger stream.

SUBDIVISIONS Areas of previously undeveloped land divided into individual homesites and/or blocks of lots with streets or roads and open spaces.

SUCCESSIONAL STAGE A phase in the gradual supplanting of one community of plants by another.

SUITABILITY The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of the economic and environmental consequences and the alternative uses foregone. A unit of land may be suitable for a variety of individual or combined management practices.

SUITABILITY ANALYSIS Process of identifying National Forest System lands to be managed for timber production. Stage I identifies the biologically capable, administratively available, and technically suitable lands. Stage II consists of an economic analysis of costs and benefits of timber management on the lands identified in Stage 1. Stage III provides the final assignment of suitable lands based on Forest objectives and economic efficiency.

SUITABLE FOREST LAND National Forest System land (as defined in CFR 219.3) for which technology is available that will ensure timber production without irreversible resource damage to soils, productivity, or watershed conditions; for which there is reasonable assurance that such lands can be adequately restocked (as provided in CFR 219.14); and for which there is management direction that indicates that timber production is an appropriate use of that area.

SUPPLY The amount of an output that producers are willing to provide at a specific price, time period, and conditions of sale.

SUPPORT ELEMENT A collection of major Forest Service activities which complement the resource elements. There are five support elements: Protection, Lands, Soils, Facilities and Rural Community, and Human Resources.

SUPPRESSION (FIRE SUPPRESSION) Any act taken to slow, stop, or extinguish a fire. Examples of suppression activities include fireline construction, backfiring, and application of water or chemical fire retardants.

SUSTAINED YIELD The achievement and maintenance in perpetuity of a high level annual or regular periodic output of the various renewable resources of the National Forest without impairing the productivity of the land.

SYSTEM ROADS See Forest System Road.

TARGET A quantifiable output assigned to the Forest.

TECHNICALLY SUITABLE FOREST LAND Land for which technology is available that will ensure timber production without irreversible resource damage to soils, productivity, or watershed conditions. There is reasonable assurance that such lands can be adequately restocked as provided in CFR 219.13(h)(3).

TEMPORARY ROAD Those roads needed only for the purchaser or permittee's use. The Forest Service and the purchaser or permittee must agree to the location and clearing widths. Temporary roads are used for a single, short-term use; e.g., to haul timber from landings to Forest development roads, access to build water developments, etc..

THERMAL COVER Thermal cover is defined as the point in the growth of a stand of evergreen coniferous trees when it has a minimum average height of 60 feet and has a minimum crown canopy of 70 percent.

THREATENED AND ENDANGERED SPECIES Any species, plant of animal, which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Threatened species are identified by the Secretary of the Interior in accordance with the 1973 Endangered Species Act.

THREE-STEP SHELTERWOOD An even-aged silvicultural system in which the old crop (the shelterwood) is removed in three successive cuttings in order to provide a source of seed and/or protection for regeneration.

TIERING Refers to the elimination of repetitive discussions of the same issue by incorporating by reference the general discussion in an environmnetal impact statement of broader scope. For example, a project environmental assessment could be tiered to the Forest Plan EIS.

TIMBER A general term for the major woody growth of vegetation in a forest area.

TIMBER HARVEST SCHEDULE The quantity of timber planned for sale and harvest by time period, usually a decade, of the Forest Plan. The first period, usually a decade, of the selected harvest schedule provides the allowable sale quantity. Future periods are shown to establish that sustained yield will be achieved and maintained.

TIMBER BASE The lands within the Forest that are suitable for timber production.

TIMBER PRODUCTION The purposeful growing, tending, harvesting, and regeneration of rotational crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use. For purposes of Forest planning, timber production does not include production of fuelwood or harvest from unsuitable lands.

TIMBER STAND IMPROVEMENT (TSI) All noncommercial intermediate cuttings and other treatments to improve composition, condition, and volume growth of a timber stand.

TRAILHEAD The parking, signing, and other facilities available at the terminus of a trail.

TRANSITORY RANGE Land that is suitable for grazing use for a period of time. For example, on particular disturbed lands, grass may cover the area for a period of time before being replaced by trees or shrubs not suitable for forage.

TREE OPENING An opening in the Forest cover created by the application of even-aged silvicultural practices. The Northern Regional Guide established size limitations and guidelines to determine when cut areas are no longer considered openings.

TRESPASS The act of going on another's land or property unlawfully.

TWO-STEP SHELTERWOOD An even-aged silvicultural system in which the old crop (shelterwood) is removed in two successive cuttings in order to provide a source of seed and/or protection for regeneration.

UNDERSTORY The trees and other woody species which grow under a more or less continuous cover of branches and foliage formed collectively by the upper portion of adjacent trees and other woody growth.

UNEVEN-AGED MANAGEMENT The application of a combination of actions needed to simultaneously maintain continuous high-forest cover, recurring regeneration of desirable species, and the orderly growth and development of trees through a range of diameter or age classes to provide a sustained yield of forest products. Cutting is usually regulated by specifying the number or proportion of trees of particular sizes to retain within each area, thereby maintaining a planned distribution of size classes. Cutting methods that develop and maintain uneven-aged stands are single-tree selection and group selection. Individual Tree Selection Cutting - The removal of selected trees from specified size and age classes over the entire stand area in order to meet a predetermined goal of size or age distribution and species composition in the remaining stand.

Group Selection Cutting - The removal of small groups of trees to meet a predetermined goal of size distribution and species in the remaining stand.

UNREGULATED HARVEST This harvest is not charged against the allowable sale quantity. It includes occasional volumes removed that were not recognized in calculations of the allowable sale quantity, such as cull or dead material and noncommercial species and products. It also includes all volume removed from unsuitable areas. Harvests from unsuitable areas will be programed as needed to meet multiple-use objectives other than timber production and for improvement of administrative sites.

UNSUITABLE TIMBERLAND Lands not selected for timber production in Steps II and III of the suitablility analysis during the development of the Forest Plan due to (1) the multiple-use objectives for the alternative preclude timber production, (2) other management objectives for the alternative limit timber production activities to the point where management requirements set forth in 36 CFR 219.27 cannot be met, and (3) the lands are not cost-efficient over the planning horizon in meeting Forest objectives that include timber production. Land not appropriate for timber production shall be designated as unsuitable in the Forest Plan.

UTILITY CORRIDOR See Corridor

UTILIZATION STANDARDS Standards guiding the use and removal of timber. They are measured in terms of diameter at breast height (d.b.h.) and top of the tree inside the bark (top d.i.b.) and the percentages of "soundness" of the wood.

VALUE, MARKET The unit price of an output normally exchanged in a market after at least one stage of production, expressed in terms of what people are willing to pay as evidenced by market transactions.

VALUE, NONMARKET The unit price of an output not normally exchanged in a market after at least one stage before consumption, and thus must be imputed from other economic information.

VEGETATION TREATMENT Any activities undertaken to modify the existing condition of the vegetation.

VIABLE POPULATION A population which has adequate numbers and dispersion of reproductive individuals to ensure the continued existence of the species population in the planning area.

VISITOR INFORMATION SERVICE (VIS) SITE A site which provides interpretative information, (directional, historical, statistical) located at Forest historical sites, overlook sites, or special interest areas.

VISUAL ABSORPTION CAPABILITY (VAC) Visual absorption cability is an estimate of the relative ability of a landscape to accept management manipulations without significantly affecting its visual character. It is a measure of the relative capability of the land to absorb visual change.

-- Low VAC classification indicates a visually intolerant landscape, one where brightly colored soils, slow growing vegetation, steep slopes or other factors that make it difficult to meet any visual quality objective.

-- Medium VAC classification would indicate a management objective allowing considerable change in the landscape.

-- High VAC classification indicates a visually tolerant landscape. Various operations would be easy to design that would still meet the visual quality objective.

VISUAL QUALITY OBJECTIVE (VQO) A desired level of scenic quality and diversity of natural features based on physical and sociological characteristics of an area. Refers to the degree of acceptable alterations of the characteristic landscape.

Preservation: In general, human activities are not detectable to the visitor.

Retention: Human activities are not evident to the casual Forest visitor.

Partial Retention: Human activities may be evident, but must remain subordinate to the characteristic landscape.

Modification: Human activity may dominate the characteristic landscape but must, at the same time, utilize naturally established form, line, color, and texture. It should appear as a natural occurrence when viewed in middle ground or background.

Maximum Modification: Human activity may dominate the characteristic landscape, but should appear as a natural occurrence when viewed as background.
Enhancement: A short-term management alternative which is done with the express purpose of increasing positive visual variety where little variety now exists.

VISUAL RESOURCE The composite of basic terrain, geologic features, water features, vegetative patterns, and land use effects that typify a land unit and influence the visual appeal the unit may have for visitors.

WALLOW A depression, pool of water, or wet area produced or utilized by elk or moose during the breeding season.

WATER YIELD The measured output of the Forest's streams.

WATER YIELD INCREASE Additional water released to the Forest streams as a result of Forest management activities.

WEEDING Generally a cultural operation eliminating or suppressing undisturbed vegetation, mainly herbaceous, during the seedling stage of a forest crop, thus reducing competition with the seedling stand.

WET AREAS Sites, often occurring at the heads of drainages, such as wet sedge meadows, bogs, or seeps. They are often referred to as "moist sites" and are very important components of elk summer range. Sites near water are important because the forage they produce is highly nutritious and heavily utilized by elk.

WETLANDS Those areas that are inundated by surface or ground water with a frequency sufficient, under normal circumstances, to support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands include marshes, bogs, sloughs, potholes, river overflows, mud flats, wet meadows, seeps, and springs.

WILDERNESS Federal land retaining its primeval character and influence without permanent improvements or human habitation as defined under the 1964 Wilderness Act. It is protected and managed so as to preserve its natural conditions which (1) generally appear to have been affected primarily by forces of nature with the imprint of man's activity substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and confined type of recreation; (3) has at least 5,000 acres or is of sufficient size to make practical its preservation, enjoyment, and use in an unimpaired condition, and (4) may contain features of scientific, educational, scenic, or historical value as well as ecologic and geologic interest.

WILDERNESS STUDY An analysis to determine an area's appropriateness, cost, and benefits for addition to the National Wilderness Preservation System.

WITHDRAWAL An order removing specific land areas from availability for certain uses.

WORK YEAR EQUIVALENTS This is 2,087 working hours. May be accomplished by one person working yearlong or several people filling seasonal positions.

YARDING The operation of hauling timber from the stump to a collecting point.

ZONE OF INFLUENCE A delineated geographic area within which the present and proposed actions exert an important influence on residents and visitors.

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AMENDMENT	CONTENT	DATE ADOPTED
#1 - Wild and Scenic River Management Direction	Amended the recreation management direction for Wild, Scenic, and Recreational River segments (MA-18, p. III-87) by establishing Limits of Acceptable Change criteria for protection of the river attributes.	Adopted 3/11/86
#2 - Wilderness Management Direction	Amended the recreation management direction for the Bob Marshall/Great Bear/ Scapegoat wilderness complex (MA-21) by adding Limits of Acceptable Change criteria for protection of the wilderness attributes. Amendment also applies, and is approved by, the Lewis and Clark, Helena, and Lolo National Forests.	Adopted 4/1/87
#3 - Westslope Cutthroat and Bull Trout Standards	Amendment in response to Chief's decision which requires westslope cutthroat trout streams be assigned to MA 12 and have same standards as bull trout. Decision amended bull trout standards and added new cutthroat standards. Plaintiffs (FOWS) appeal.	Adopted 2/27/90 Appealed 4/12/90 Affirmed 7/2/90
#4 - Westslope Cutthroat Trout Research Needs	In response to Chief's decision, amended Plan to include research needs related to westslope cutthroat trout.	Adopted 2/27/90
#5 - Revegetation of Non-System Roads	Amendment in response to Chief's direction to provide for revegetation of non-system roads. Added standard that non-system roads be revegetated within 10 years.	Adopted 4/26/89
#6 - ORV Monitoring	In response to Chief's decision, amended Plan to add ORV use to monitoring requirements.	Adopted 4/26/89
#7 - Clarify MA-2A ORV Management Direction	Amendment in response to Chief's decision to review resource damage in MA-2A areas caused by ORV's and clarify Plan direction. Amended Plan language regarding whether ORV use is permitted.	Draft 12/12/88 Not completed
#8 - Clarify Standards NOT Discretionary	Amendment in response to Chief's direction. Amendment reworded general standard #1 to state standards (including T&E species) are not discretionary.	Adopted 7/31/89
#9 - Interagency Grizzly Bear Guidelines	Amendment in response to Chief's decision. Added Interagency Grizzly Bear Guidelines as Appendix OO.	Adopted 7/31/89 Appealed 9/14/89 Affirmed 4/17/90
#10 - Open Road Density Standards	Amendment in response to Chief's decision to clarify density of 1 mi/mi^2 in MS 1. Amendment proposed to apply 1 mi/mi^2 in MS 1 and 2 mi/mi^2 in MS 2. Decision appealed and rescinded. New DEIS prepared; FEIS delayed pending completion by the USFWS of the draft Grizzly Bear Recovery Plan. FEIS not completed.	Adopted 7/31/89 Appealed 9/13/89 Rescinded DEIS 12/90 FEIS Delayed 3/92 Superseded by Amendment #19

AMENDMENT	CONTENT	DATE ADOPTED
#11 - Standards for Consultation with U.S. Fish and Wildlife Service	Amendment in response to Chief's decision to clarify consultation process. Amendment added language regarding when consultation is to take place.	Adopted 7/31/89
#12 - Gray Wolf Management Direction	Amendment in response to Chief's direction to review timing restriction and add wolf recovery plan. Added wolf recovery plan as Appendix PP.	Adopted 7/31/89
#13 Bald Eagle & Peregrine Falcon Recovery Plans	Amendment in response to Chief's direction. Amended bald eagle habitat standards and added recovery plans as Appendices QQ, RR, and SS.	Adopted 7/31/89
#14 - MA-16 Management Direction	Amendment in response to Chief's direction to clarify MA 16 intent to use only roadless logging methods. Amended MA 16 language.	Adopted 2/27/90
#15 - Sensitive Plants	Amendment in response to Chief's direction. Amended Forest Plan standard and the list of sensitive plant species to agree with the list approved by the Regional Forester in 1991.	Adopted 11/12/91
#16 - Old Growth Management Indicator Species Standards	Amendment in response to Chief's direction to document additional analysis of habitat requirements, and the distribution of habitat, for pine marten, barred owls, and pileated woodpeckers. DEIS proposed additional standards to ensure that these species will remain well distributed throughout the Forest.	Draft EA 3/9/90 DEIS 6/92 FEIS not completed
#17 - Weed Management in the Bob Marshall Wilderness Complex	Amended standard to implement an integrated pest management approach to weed management in the Bob Marshall Wilderness Complex (Flathead, Helena, Lewis and Clark, and the Lolo National Forest Plans).	Adopted 5/17/93
#18 - ASQ Partitioning	Regional Forester's decision to separate the ASQ into two non-interchangeable components for the purposes of programming and monitoring: one component from roaded areas, the other from inventoried roadless areas. The decision did not change the total ASQ.	Adopted 3/12/91 Appealed 7/15/91 Withdrawn 10/4/91
#19 - ASQ, Objectives and Standards for Grizzly Bear Habitat Management	Amendment in response to July 5, 1994 court order. Flathead National Forest formally consulted with the USFWS. Forest Plan direction was amended to ensure compliance with the Endangered Species Act, by amending forest-wide objectives and standards for grizzly bear habitat and timber management, and recalculating the maximum amount of timber we can offer for sale during the planning period 1995 to 1999.	Final EA/DN 3/1/95 Appealed 4/19/95 Affirmed

AMENDMENT	CONTENT	DATE ADOPTED
#20 - Water Howellia	Amendment to add goals, objectives, and standards for conservation and recovery of water howellia, and to establish a Botanical Special Interest Area.	Adopted 8/2/96
#21 - Management Direction Related to Old- Growth Forests	Amendment of wildlife and vegetation goals, objectives, and standards related to management of old-growth forests.	FEIS 9/98 ROD 1/14/99
#22 - Research Natural Areas	Regional Forester's decision to establish 18 RNAs and 2 Botanical SIAs on 6 National Forests. On the Flathead NF, the Swan River and LeBeau RNAs were established, and all 5 RNAs were assigned to MA-3A.	Adopted 7/29/97
#23 – Management Area Change	Amendment to create a new management area designation (MA-10B) for a ten-acre parcel in the Coram Pasture Administrative Site.	Adopted 12/07/01
Regional Guide Amendment - INFISH	Interim Strategies for Managing Fish-producing Watersheds in eastern Oregon and Washington, Idaho, western Montana, and portions of Nevada	Adopted 7/28/95

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