

United States  
Department of  
Agriculture

Fiscal Year 1989

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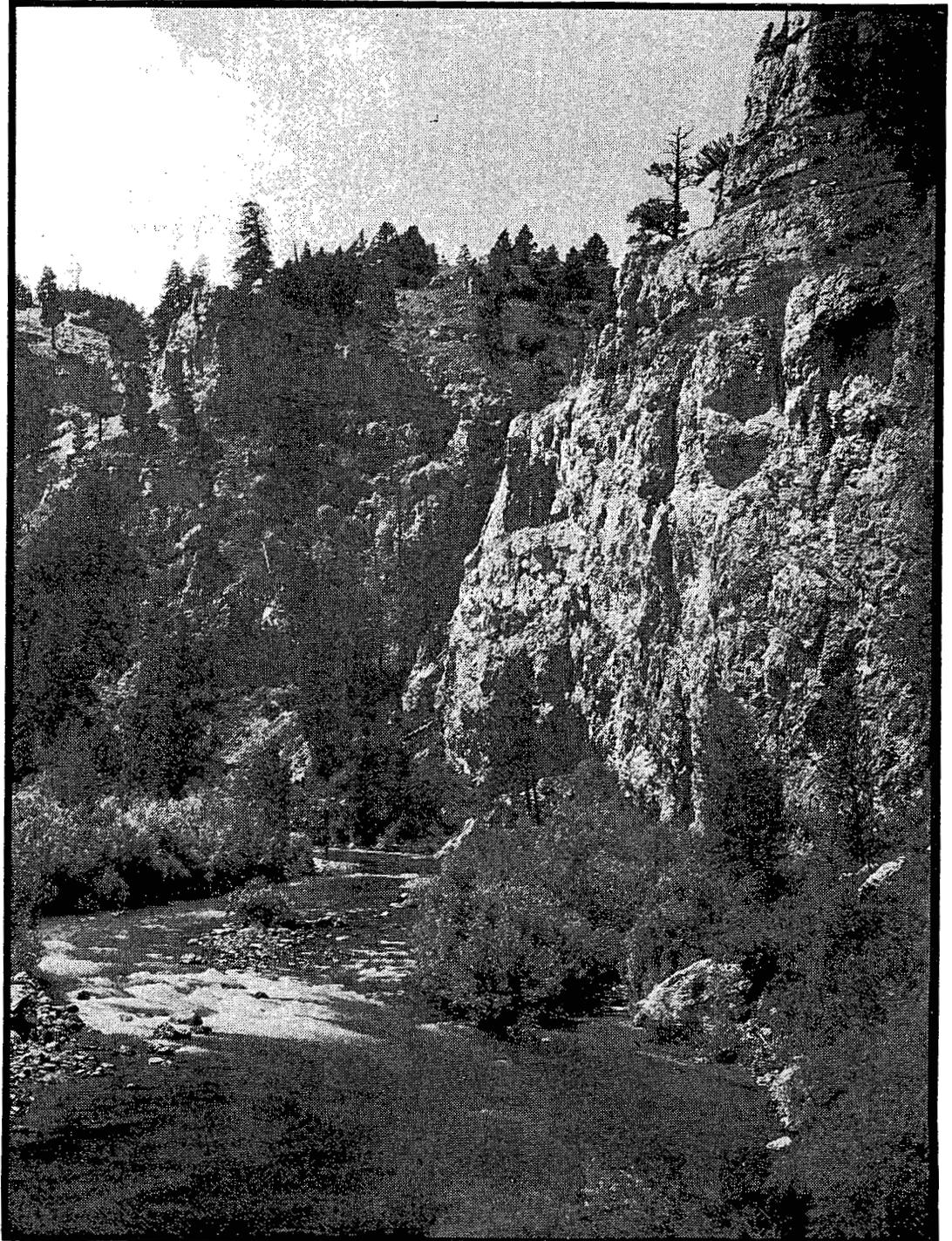


Lewis and Clark  
National Forest  
P.O. Box 869  
Great Falls, MT.  
59403



## LEWIS AND CLARK NATIONAL FOREST PLAN

### Monitoring and Evaluation Report



Belt Creek Canyon below Monarch in the Little Belt Mountains.



United States  
Department of  
Agriculture

Forest  
Service

Lewis & Clark NF

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REPLY TO: 1920

Date: June 25, 1990

SUBJECT: FY 1989 Monitoring and Evaluation Report

TO: Forest Plan Participant

Enclosed for your review and use is the "FY 1989 Monitoring and Evaluation Report" for the Lewis and Clark National Forest Plan.

As shown by the Report, I believe we are well on our way of implementing the integrated resource management as described in the Forest Plan into on-the-ground projects. These projects, which consider all resources for a particular piece of land, help us move toward the desired future condition for the Forest as described in the Plan.

After three years of monitoring, we are seeing some trends develop. Some of these trends, such as meeting or exceeding many of our Forest Plan outputs and activity levels, makes us feel good. For example, our 1987 wildlife habitat improvement level was at less than 50% of the projected Forest Plan level. Through the development and use of a habitat improvement program, our 1989 level was almost double the projected Forest Plan level.

In some areas where we have not been completely successful in meeting Forest Plan outputs, we have rechanneled our energies. Over the last three years, the Forest has sold a little over 60% of the timber sale program (Allowable Sale Quantity). The shortfall is the result of not getting Environmental Assessments through the appeal process. We have shifted documenting our timber sale analysis into EISs. While they take more time to prepare, EISs are more defensible and they give the public more opportunity to participate in the process. We believe that with this increased effort we can meet our goal of having the NEPA document completed two years before project implementation.

In a few cases, we feel frustrated because our program lacks the time and money to accomplish the level of activity that was envisioned in the Forest Plan. For example, our goal of not having more than 10% of our range allotment management plans outdated is not being met. With limited funds, we are placing our emphasis on range allotment administration. We feel that this has a higher priority.

Although the overall budget to implement the Forest Plan has been lower than envisioned, we are seeing a more balanced program. Through the outyear programming process the actual Forest budget is being moved towards those elements that are emphasized in the Forest Plan.

As part of the Forest Planning process, we must conduct a 5-year Review of our Forest Plan. We will be analyzing and dealing with items such as these during this review.

In some related Forest Plan happenings, the Chief of the Forest Service has just affirmed the Regional Forester decision on the last two Forest Plan appeals. This brings to a close a long chapter in our Forest Planning process. All 13 of the Forest Plan appeals have been resolved (1 was withdrawn, 1 was dismissed, and in 11 the decision was affirmed). In response to the appeals, the Chief has directed the Forest to:



Reassess the demand for timber (5 year Review).

Reassess the timber values and costs (5 year Review).

Analyze the effects of the alternatives on Management Indicator Species not displayed in the Forest Plan EIS.

Correct the inconstancy pertaining to motorized use in Management Area Q. (This was completed as part of Forest Plan Amendment No. 3).

The Lewis and Clark Forest continues to be a very busy place. I want to call to your attention some of the more important projects that are described on pages 54 through 58 in the Monitoring and Evaluation Report. Again, I want to thank you for your interest in the Lewis and Clark National Forest. Please contact us if you have any questions on the Forest Plan or the Monitoring and Evaluation Report.



JOHN D GORMAN  
Forest Supervisor



FOREST PLAN MONITORING AND EVALUATION REPORT

FISCAL YEAR 1989

LEWIS AND CLARK NATIONAL FOREST

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## II. GOALS

The goals for monitoring and evaluating the Forest Plan are to determine:

- How well the Forest is meeting its planned goals and objectives;
- If existing and emerging public issues and management concerns are being adequately addressed;
- How closely the Forest Plan management standards are being followed;
- If outputs and service are being provided as projected;
- If the effects of implementing the Forest Plan are occurring as predicted, including significant changes in the productivity of the land;
- If the cost of implementing the Forest Plan are as predicted;
- If implementing the Forest Plan is affecting the land, resources, and communities adjacent to or near the Forest;
- If activities on nearby lands managed by other Federal or other governmental agencies, or under the jurisdiction of local governments, is affecting management of the Forest;
- If research is needed to support the management of the Forest, beyond that identified in Chapter II of the Forest Plan; and
- If there is a need to amend or revise the Forest Plan.

## III. FOREST PLAN MONITORING AND EVALUATION

Forest Plan management activities were monitored and evaluated as outlined in Table 5.1 Forest Plan Monitoring Requirements and Forest Service Handbook 1909.12, to determine how well objectives were met and how closely management standards were applied. The document resulting from the use of the Decision Flow Diagram constitutes the evaluation report. As applicable, the following will be included in the evaluation report:

- A quantitative estimate of performance comparing outputs and service 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.

The results of the evaluation report have been summarized and are discussed on the following pages. Each monitoring item lists: (1) what is being measured; (2) frequency of measurement; (3) reporting period; (4) variable which would initiate further evaluation; and (5) the results of the monitoring. They are grouped by resource area and follow the monitoring requirements in the Lewis and Clark Forest Plan (Table 5.1).

## RECREATION

### **A-1 Recreation Opportunity Spectrum setting being implemented.**

**Frequency of Measurement:** 100 percent per 10 years.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Plus or minus 10 percent of projected Recreation Opportunity Spectrum (ROS) setting.

The settings to be monitored in the Forest Plan are: primitive, semi-primitive, and roaded, natural. No differentiation is made between semi-primitive non-motorized and semi-primitive motorized settings in the Forest Plan. These settings are determined by the Forest Travel Plan.

The Forest Plan provides for management of 436,000 acres in a primitive setting as wilderness. Currently the Forest has 384,000 acres in wilderness and the Forest Plan proposes an additional 52,000 acres which is managed in a primitive setting. The final decision concerning wilderness designation is dependent on Congressional action. A Wilderness bill was passed by Congress in 1988 which would have provided considerably more wilderness than recommended in the Forest Plan. However, the legislation was vetoed by the President and no change actually occurred in the wilderness acreage during the 1988 and 1989 period.

The Forest Plan also provides for 933,000 acres to be managed in a semi-primitive condition and 457,000 acres to be managed in a roaded natural setting during the first decade. No significant change occurred in these settings during FY 1989. The only activities conducted which would affect these settings were timber sales totalling approximately 65 acres. These were all conducted in presently roaded areas where the Forest Plan recreation setting is roaded, natural. Therefore, the recreation setting is consistent with Forest Plan direction. The monitoring plan suggests measuring this item only at ten-year intervals and requires no additional evaluation unless the setting deviates plus or minus 10 percent from the planned recreation settings. Therefore, no additional evaluation is required.

The recreation settings in the Forest Plan were refined in FY 1988 by completing a new Forest Travel Plan. This Travel Plan implemented the recreation settings in the Forest Plan and also differentiated between semi-primitive motorized and semi-primitive non-motorized settings on the Forest. This Travel Plan was completed with extensive public involvement and is a key tool for Forest Plan implementation of recreation settings. The new Travel Plan was adopted in June, 1988. New signs have been installed and new maps have been prepared and made available to the public. Seventeen appeals were received on the Travel Plan and these were responded to in FY 1988. Three appeals are still being negotiated at the end of FY 1989. In all of the other appeals, the Forest Supervisor decision was affirmed. The new Travel Plan is currently being implemented.

**A-2 Recreation direction meets expectation of visitor.**

**Frequency of Measurement:** 10 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989)

**Variability Which Would Initiate Further Evaluation:** Adverse comments or correspondence.

This particular item is difficult to measure in an objective way. At almost any point in time, some people's expectations would be met and the expectations of others would not be met. The measurement is through visitor contacts, inspections, and plans. In this monitoring report the assumption is made that the Forest Plan direction is satisfactory unless strong public complaints have been received and/or major issues have developed which indicate that the direction is not correct. Several identified issues were addressed in the revision of the Forest Travel Plan.

Another measure of the effectiveness of recreation direction was the recreation program review conducted in FY 1987 by the recreation staff group in the Regional Office. This review was conducted at the request of the Forest to assess the current status of the recreation program and to make recommendations for future improvements in the program. Some of the key management concerns which were surfaced in that review are listed below. These have been addressed with an action plan in FY 1988 and accomplishment of the action items to date are reported below. The major findings of this review as they relate to visitor expectations are as follows:

**A. The Forest Plan budget as originally proposed is probably inadequate to meet all of the recreation goals. This finding is based on a Regional analysis of Forest Plan budgets and related workloads.**

The Forest Plan budget was amended to correct the identified problem.

**B. The coordination between timber management activities and snowmobile/cross country ski activities in the Kings Hill area needed to be strengthened. Several comments were received from recreationists concerning timber sales (particularly small sales) which have created problems; such as, (1) plowing of roads which had been approved for snowmobile trail grooming, (2) placement of hazards such as snow berms in groomed snowmobile trails, (3) unsafe dual use of plowed areas by snowmobiles and logging equipment, (4) placement of slash in cross country ski trails, and (5) concerns for wind scour of snow trails (due to opening of the tree canopy).**

These concerns have since been addressed through timber sale contract clauses and development of a coordination procedure. This procedure involves consultation between the snowmobile clubs and Forest Service when timber sales are proposed for winter logging in areas of groomed snowmobile trails. Generally, the amount of winter logging has been reduced in new timber sales which has reduced the potential for conflict. Coordination between timber management and snowmobile/cross country ski activities was accomplished in 1989.

**C. Several concerns about signing were surfaced during the review and are listed below.**

These concerns with signing led to a major Forest objective in FY 1988 to correct signing problems. As a result of that effort, a new Forest policy concerning signing was developed to address the problems listed below. That policy was developed in consultation with the Regional Office and with the District Rangers on the Forest. This policy is currently being incorporated into the Forest Service Manual and considerable progress was made in FY 1989 to implement the policy on the ground.

**(1) Signing is not adequate on the Forest to direct recreationists to the opportunities which exist.**

A major provision of the new sign policy is to direct people from major highways to the National Forest. This will be done with standard signs stating "National Forest Access" at intersections with main highways, followed by appropriate directional signing at intermediate intersections between the highway and the National Forest boundary. The new Forest Travel Maps also show access routes to the National Forest where a public right-of-way exists. This signing has been completed on the Rocky Mountain Division of the Forest and will be completed on the Jefferson Division in FY 1990.

**(2) In some cases signing is negative and focuses on regulations without providing useful visitor information.**

Standard specifications were developed for bulletin boards at trailheads and in campgrounds. Several suggestions were adopted in the signing policy to reduce negative messages and emphasize providing positive user information. New campground signing reflects the concern and provides useful information.

**(3) In many cases it is difficult to identify access routes to the Forest.**

This is addressed above. New "National Forest Access" signs have been purchased and will be installed in FY 1990.

**(4) Signing on some of the winter sports trails also needs to be improved.**

A policy was developed to provide consistent signing of snow trails on the Forest. This policy is being implemented on all Ranger Districts at the present time.

**(5) The new Forest Travel Plan will need to be signed on the ground to be effectively implemented.**

A standard approach to signing the new Forest Travel Plan was developed. All signs have been ordered and many have been installed. The remainder will be installed in the spring of 1990. The intensive fire season on the Forest in 1988 prevented completion of the signing as soon as desired.

**D. A major concern highlighted in the review is the need to obtain reasonable public access to the National Forest. The Lewis and Clark National Forest is composed of six separate mountain ranges which are surrounded by private land. Because of this, a large number of rights-of-way are required to provide long term public access. The current Forest Plan direction identifies most of the rights-of-way needed to provide this access. However, progress on obtaining these access points has been slow and protracted negotiations with landowners has been the rule. A need exists to more efficiently acquire the identified rights-of-way.**

The action proposed to meet this need is to focus efforts in a given mountain range or area until the job is complete. This will allow an analysis of access needs in a given mountain range/area. Personnel can also be focused efficiently to negotiate with landowners, survey, and produce right-of-way plats, and appraise the value of right-of-ways. This approach was initiated in the Highwood Mountains in FY 1988. Access needs in the Highwoods were given high priority because of their proximity to recreation users in Great Falls. Negotiations are continuing on the Highwoods access routes. Coordination with other public agencies, particularly the counties, is also being strengthened. In FY 1989, public scoping, as part of the National Environmental Policy Act (NEPA) process, was conducted to determine what access and recreation needs the public would like to have in the Highwood Mountains. This analysis will continue into FY 1990.

**E. Another concern identified in the review is the need to improve integrated planning for recreational opportunities on an "area" basis and to use this planning to identify appropriate recreation facilities. This planning must be based on the recreation setting in the Forest Plan and be coordinated with recreation users. No need (because of projected demand) is identified in the Forest Plan to construct new developed campgrounds. Therefore, this planning will be focused on rehabilitating existing sites to meet today's needs and on providing facilities such as trails and trailheads which facilitate dispersed recreation opportunities.**

Forest personnel and cooperators completed the plans for the Marias Pass Recreation Complex in FY 1988. Construction began in the summer of 1989 and will be completed in the spring of 1990. When complete the area will include a redesigned viewing area for the Roosevelt Memorial and other statues and memorials in the Pass area. Parking will be provided for the Memorial Square and for snowmobile winter use of the area. The existing Summit Campground is being rehabilitated and the roads and parking spurs will be paved. Visitor information concerning Marias Pass, Glacier National Park, and other recreation opportunities in the area will be provided. This is a cooperative project with several agencies and individuals involved. Funding is being provided by the Forest Service, Montana Department of Highways, and Montana Department of Fish, Wildlife and Parks.

Legislation was also passed in 1988 authorizing construction of the Lewis and Clark Visitor Center in Great Falls which will be managed by the Forest Service. The legislation requires that a final plan for the Center be prepared and presented to Congress within two years for funding. Much of the recreation planning activity in FY 1989 focused on the Visitor Center. This planning is being done in partnership with local agencies and individuals.

**F. Another concern is to develop a policy towards providing outfitter services on the Forest. An interim policy was developed on the Forest in FY 1987 and is currently being followed.**

Development of a more definitive policy was initiated in FY 1988 and completed in FY 1989. Outfitter policy for the Smith River on the Kings Hill Ranger District was developed in the Smith River Management Plan completed in FY 1988 and implemented in FY 1989. The Smith River Management Plan was developed in cooperation with the Montana Department of Fish, Wildlife and Parks and was finalized in FY 1988. The Bob Marshall Wilderness Complex outfitter policy conforms with the Bob Marshall, Great Bear and Scapegoat Wildernesses Recreation Management Direction completed in FY 1987.

**G. A strong internal and public concern is the ability of the Forest to provide adequate law enforcement to implement the changes in the new Forest Travel Plan.**

Presently, there is a Level IV Law Enforcement Officer assigned to the Supervisors Office in Great Falls, and a Level IV Law Enforcement Officer stationed at the Rocky Mountain and Kings Hill Ranger Districts. In addition, patrols were conducted during the hunting season to enforce Travel Plan rules and during the firewood season to enforce firewood regulations. Information from Ranger District personnel indicates that the new Forest Travel Plan was implemented with few problems. Particularly noticeable was a reduction in complaints about All Terrain Vehicles (ATVs) during the 1989 hunting season. Some localized areas required additional signing and additional enforcement effort in FY 1989. The Tenderfoot-Deep Creek area on the Kings Hill Ranger District was specifically mentioned. Late season efforts may also need to be intensified in some areas. Overall, however, the new Forest Travel Plan was implemented with a minimum of conflict and enforcement problems were limited.

**A-3 Actual recreational use in the categories of Wilderness, dispersed, and developed recreation as compared to projected levels in the Forest Plan.**

**Frequency of Measurement:** Annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Plus or minus 25 percent variance yearly or plus or minus 10 percent over a 5-year period.

The Recreation Information Management (RIM) reports for the Forest provide the base information to measure use in the categories described. The Forest Plan projects that total recreation use will average 869,000 visitor days in the first decade. This is broken down as follows: (1) Developed recreation - 169,000 visitor days; (2) non-wilderness dispersed recreation - 614,000 visitor days; and (3) wilderness use - 86,000 visitor days.

Recreation use in FY 1989 was as follows: (1) Developed recreation - 205,000 visitor days (121 percent of the Forest Plan level); (2) non-wilderness dispersed recreation - 450,000 visitor days (73 percent of the Forest Plan level); and (3) wilderness use - 60,000 visitor days (70 percent of the Forest Plan level). Developed site use was significantly above that of FY 1988. Dispersed recreation use was 11 percent less than in FY 1988. Wilderness use showed an increase over FY 1987 and 1988.

Summary of FY 1987 through FY 1989 recreation use is as follows:

RECREATION (Thousand Visitor Days)

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Developed Recreation	169	145	175	205							
Non-Wilderness Dispersed Recreation	614	581	503	450							
Wilderness	86	54	42	60							

The major increase in wilderness use may be attributable to people desiring to see the effects caused by the major prescribed natural fires that burned the area in 1988. While wilderness usage increased, recreationists, including commercial outfitters, avoided camping in burned areas. As stated in the monitoring report for FY 1987, wilderness use was on the decline and as indicated by use statistics for the Bob Marshall Wilderness, use of the area peaked in 1982. Future monitoring will determine if this declining trend continues and should give an indication of the effects of the 1988 fires on wilderness use to help us determine if actual use in FY 1989 is a reversal of the downward trend. Some adjustments may have to be made in the Forest Plan if usage continues to decline.

The level of use in dispersed areas outside wilderness also is below the projected Forest Plan level. The projections for dispersed use will also need to be monitored for validity. As projected now, a steady rate of increase would occur through the planning period. Increases in dispersed recreation use may well occur as

a result of better marketing of recreation opportunities on the Forest and by providing additional public access and improved informational signing. Better marketing is planned as the Forest responds to the National Recreation Strategy.

#### **A-4 Condition of developed sites.**

**Frequency of Measurement:** Annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Less than acceptable standards, public safety hazards not corrected by 1990, poor conditions not corrected by 2005.

The condition of developed sites was about the same or slightly improved in FY 1989. The Forest has identified recreation rehabilitation projects by priority through the year 2000 based on the budget level programmed in the Forest Plan. All developed site water and sanitation systems have been brought up to proper standard in the past few years. Public health and safety hazards are corrected at all sites, except for routine maintenance. Poor site conditions will be corrected by 2005 as projected in the Forest Plan, provided that recreation funds are received as programmed. Attention will be necessary to provide handicapped facilities.

#### **A-5 Recreation Opportunity**

**Frequency of Measurement:** Annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Failure to complete by FY 1986.

This standard is measured by the status of Recreation Opportunity Guides (ROG) on each Ranger District. Further evaluation is triggered by a failure to complete these guides on all Districts by FY 1986. Currently the guides have been completed on the Rocky Mountain Division, but are not complete for the Jefferson Division of the Forest. This resulted in a Forest Objective in FY 1988 to complete key ROG pages for specific areas in the Jefferson Division. The ROG for the Kings Hill Ranger District in the Little Belt Mountains was completed in FY 1988. ROGs were initiated in the Snowy Mountains and in the Highwood Mountains. The remainder of the ROG will be completed over the next 1-2 years.

**A-6 Off-road vehicle damage and Travel Plan effectiveness.**

**Frequency of Measurement:** Annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:**

Off-road vehicle damage - Conflicts with Forest Management Area goals.

Travel Plan effectiveness - Increase of 20 or more citations or variances yearly.

This standard is monitored by two items. The first item is the status of the Forest Travel Plan as it relates to Forest Plan goals. As stated earlier, the Forest Travel Plan was revised in FY 1988 specifically to bring it into compliance with Forest Plan standards and to implement the recreation settings in the Forest Plan. The new Forest Travel Plan also addressed several issues; such as, ATVs which surfaced.

The second monitoring item is the number of Forest Travel Plan citations issued and the number of Travel Plan variances granted. These are summarized below along with a short narrative response concerning the types of violations and problems experienced by the Districts. An increase of 20 violations/investigations indicates the need for further evaluation.

*Rocky Mountain Ranger District*

Ten travel plan related citations were issued in FY 1989. Most violations were issued during the hunting season. Citations were issued for travel on closed roads and ATV use within designated wilderness. District personnel feel that compliance with Travel Plan restrictions is improved over previous years, but additional enforcement effort is needed. The Ranger District has one Level IV Law Enforcement Officer. Enforcement efforts are enhanced through cooperation with local, state, and federal officers.

*Judith Ranger District*

No citations were issued and no variances were granted in FY 1989. Overall impressions were that the new Forest Travel Plan was generally supported and violations were few. Only two known violations of the Travel Plan were noted during the hunting season. These violations should be alleviated in FY 1990 with better signing and scheduling of back country guards or trail crews to monitor use and enforce Travel Plan restrictions. Signing in the Hoover Springs/Ant Park area is not effective in showing open and closed routes.

*Musselshell Ranger District*

During FY 1989, the Ranger District recorded five incidences of Travel Plan violations. Four citations were issued for violating Travel Plan restrictions. The most significant problems noted continue to be associated with motorcycles, ATV, and 4x4 use in restricted areas.

*Kings Hill Ranger District*

Nine Travel Plan violations were investigated by District personnel. Four violation notices were issued. In general, compliance was good and few incidents were noted in 26 days of patrolling during the fall. Additional enforcement effort was taken in the Tenderfoot-Deep Creek area and during the last two weeks of hunting season and will continue into FY 1990. A Level IV Law Enforcement Officer has been assigned to the Ranger District.

### *Overall Forest Picture*

Overall, District personnel felt that more Travel Plan enforcement was needed and that attention must be given to completion of signing. However, the general impression of District personnel was that overall compliance with the Forest Travel Plan was good. Particularly noticeable was the limited number of complaints about ATVs during this hunting season. Eighteen complaints were received in the Supervisor's Office concerning the new Forest Travel Plan and it appears to have reasonable public acceptance. The extensive public involvement in development of the Forest Travel Plan may have paid dividends in that the Travel Plan was understood by many people prior to implementation.

Cooperation was received from the Montana Department of Fish, Wildlife and Parks, County Officers, and the general public in reporting known violations.

#### **A-7 Condition of visual resource meets objectives in plan.**

**Frequency of Measurement:** 25 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Deviation from approved Visual Quality Objectives determined by Interdisciplinary Team review of environmental assessments.

This item is measured by taking a 25 percent sample of environmental assessments completed in FY 1989. Four assessments were reviewed. With the exception of the Showdown Trails Environmental Assessment, Visual Quality Objectives appear likely to be met. Several of the proposed ski trails will not improve the visual quality of the Showdown Ski Area and will be visible from US Highway 89, a major arterial road. The Environmental Assessment indicated the difficulty in the past of trying to visually rehabilitate existing runs. Showdown Ski Area is a heavily modified landscape and does not meet the Forest Plan Visual Quality Objectives of Partial Retention.

#### **A-8 Cultural Resource Protection.**

**Frequency of Measurement:** Selected sites - Once per 5 years.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Less than 10 percent accomplishment per year.

The cultural resource program continued to show improvement through FY 1989. For the third year, the program has successfully operated under the Northern Region objective of "Level II."

In all, 44 projects were field inventoried in FY 1989. This resulted in cultural inventory of about 12,200 acres. This acreage has significantly increased more than three-fold from FY 1988. Project complexity continues to be high, often involving use of more sophisticated archaeological techniques than basic survey. Many projects required intensive inventory within a small unit of land (such as range projects involving one acre), although we are trying to survey 5-acre minimums. An additional district archaeologist was hired in FY 1989, which contributed to the increase in inventoried acreage.

A total of 34 cultural sites were located within the project areas. Eleven prehistoric sites were newly recorded, as were six historic sites. Most of these inventoried sites were archaeologically tested and Determinations of Eligibility (DOE) were made. An eligibility determination is a helpful management tool, as it resolves the status of a site, so that a "reassessment" does not need to be done in the future. If no eligibility determination is made, then project activities must avoid sites, regardless of their significance.

Highlights of the FY 1989 field season include: a consolidated inventory was begun at the Cooks Flat Archaeological District on the Musselshell Ranger District. A variety of site types are represented in the 18 prehistoric sites recorded in the district's vicinity; the area holds potential to yield significant information. Field work will continue in FY 1990. Another significant archaeological find was made in the vicinity of Haymaker on the Musselshell Ranger District. Inventory was completed for the Lewis and Clark Interpretive Center to be located in Great Falls. A number of trails were inventoried on the Rocky Mountain Division, and the historically Theodore Roosevelt memorial obelisk was moved about 100 feet from the center of U.S. Highway 2.

The Chevron/Fina Draft Environmental Impact Statement (DEIS) was completed. This involved considerable consultation with Blackfeet Indian traditionalists, and also considerable research for compiling background information regarding the Blackfeet Indian Tribe. A number of presentations (including open houses) were made regarding the Blackfeet's concerns for the Badger-Two Medicine area. The archaeological inventory was also completed and documented.

Some of the more important trends in the cultural resource program over the past few years include: (1) inventories are more thorough and intensive, (2) minimally land disturbing projects are routinely surveyed, (3) a greater number of cultural sites are being recorded and tested, (4) Determinations of Eligibility are being sought, (5) context studies are being undertaken, and (6) involvement in the Forest Plan implementation and the National Forest Management Act (NFMA) and the National Environmental Policy Act (NEPA) processes has increased and cultural resources continue to become better incorporated into the overall Forest Service mission.

Summary of FY 1987 through FY 1989 cultural resource accomplishment is as follows:

CULTURAL RESOURCE

Description	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Field Inventory Projects	66	41	44							
Acres Inventoried (Thousand Acres)	5.7	3.8	12.2							
Cultural Sites Inventoried	40	34	34							
Newly Recorded Sites	30	23	17							

## WILDERNESS

### **B-1 Maintenance of existing quality of Wilderness ecosystems.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Degradation of environment.

No further monitoring will be accomplished on this item as recommended by Forest Plan Amendment Number 3.

### **B-2 Bob Marshall-Great Bear-Scapegoat Management Direction.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Failure to meet the Bob Marshall, Great Bear and Scapegoat Wildernesses Recreation Management Direction (Appendix U).

New recreation management direction was completed for the Bob Marshall Wilderness Complex in FY 1987 and each of the four Forest Plans were amended to include this direction. The monitoring which was completed in FY 1989 on the Lewis and Clark National Forest is detailed in Appendix A.

Studies to monitor the short and long term fire effects of both the Gates Park and Canyon Creek Fires continued in FY 1989. Preliminary studies indicate that the fires within the Bob Marshall and Scapegoat Wildernesses in FY 1988 resulted in improvement of wilderness values and the quality of wilderness ecosystems.

### **B-3 Change in Roadless Inventory.**

**Frequency of Reporting:** 100 percent per 10 year.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Plus or minus 10 percent projected change in roadless inventory.

This item is only measured at ten-year intervals. However, no significant change occurred in the roadless inventory in FY 1989. Timber sales sold in FY 1988 were all in existing roaded areas and no other management activities occurred which would alter the present roadless inventory.

## WILDLIFE AND FISH

### **C-1 Threatened and Endangered Species: Grizzly Bear-Maintain occupied habitat capacity.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Any indication of downward trend in grizzly bear population.

The grizzly bear population appears to be stable or increasing (Dood, et al. 1986). In a monitoring effort tied to the Recovery Plan, efforts have been made to record sows with cubs and sows with young for the last three fiscal years (1987, 1988, and 1989). The results of these surveys have revealed that all six Bear Management Units (BMUs) on the Rocky Mountain Division have had a sow with cubs located within them. There were 7 sows with young sighted on National Forest lands, of these, 4 were sows with cubs of the year. This is not an indication of population levels, but it is the beginning of trend information that shows occupancy of each BMU by sows with young and that reproduction is taking place.

Two long term monitoring transects were established (coordinated with the Montana Department of Fish, Wildlife and Parks) to acquire trend data for the monitoring of the bear in respect to the Recovery Plan. These transects are located along the North Fork of the Sun River and in the Renshaw Mountain-Willow Creek area, and were monitored in June. One set of grizzly tracks was identified on the North Fork of the Sun River transect. No tracks were found on the Renshaw Mountain-Willow Creek transect.

Law enforcement efforts were continued in order to deter the illegal take of grizzly bears on the Rocky Mountain Division.

Three biological evaluations were completed in response to Forest management activities within grizzly bear habitat (Big George Burn, Canyon Creek Fire timber salvage, and EPS gasoline), with a no effect resulting to the grizzly bear. Two other biological evaluations were completed for Draft Environmental Impact Statements (DEISs); which were, Blackleaf completed by the Bureau of Land Management, and Chevron/Fina completed by the Forest Service. Both of these biological evaluations were submitted for formal consultation to the United States Fish and Wildlife Service which rendered a non-jeopardy opinion for both projects.

During FY 1989, there were 21 problem bear incidents that were handled under the Rocky Mountain District's "Problem Bear Policy" of which no incidents involved grizzlies. Actions taken included the transplanting of 3 bears, closure of dispersed campsites, removal of attractants, and signing of trails to alert users that there had been bear incidents.

The classification of vegetation types by the LANDSAT project was completed for all lands south of the Teton River. Once computer maps are made during FY 1990, the vegetation mapping for the remaining four BMUs will be complete.

**C-2 Threatened and Endangered Species: Gray Wolf, Bald Eagle, Peregrine Falcon - Maintain suitable, unoccupied habitat.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Deterioration or continuing disturbance on more than 5 percent of suitable unoccupied habitat.

No projects were approved which would cause a deterioration or continuing disturbance to suitable unoccupied habitat for the gray wolf, bald eagle, or peregrine falcon.

This year marked the first year in approximately 15 years that there was such a high level of recorded wolf sightings. There were 13 confirmed sightings of wolves on the Rocky Mountain Ranger District. Of these, three were multiple sightings (two wolves together). These sightings were forwarded to the United States Fish and Wildlife Service to incorporate into their data base in accordance with the Recovery Plan direction (USFWS, 1987).

Biological evaluations were completed for the gray wolf in conjunction with the same projects discussed for the grizzly bear (C-1), with the same conclusions, "no effect" on the wolf or its habitat.

There are currently no known active nest sites of bald eagle or peregrine falcons on the Forest. Observations of bald eagles were recorded and added to the Forest data base. Bald eagles continued to be seen foraging over broad areas of private rangeland and on the Forest during the winter. Management practices that could potentially affect wintering bald eagles were reviewed in accordance with Forest Plan direction.

Forest Service biologists cooperatively assisted United States Fish and Wildlife Service (USFWS) and Montana Department Fish, Wildlife and Parks (MDFWP) biologists in completing surveys. The Forest again participated in the National Bald Eagle survey in January 1989. A total of 39 bald eagles were observed during January 12 and 13, 1989 winter counts, plus 3 bald or golden eagles were observed along the Missouri River and 6 along the Musselshell River and Cottonwood Creek. The Missouri River is part of the National Survey.

Two bald eagle nests are located on private lands between the Rocky Mountain and Jefferson Division. In FY 1989 the "Craig" bald eagle nest still remained abandoned and unoccupied and the "Cascade" nest was occupied but failed to produce young.

No surveys were conducted by the USFWS or Forest Service of historic peregrine falcon sites during FY 1989 (personal communication, D. Harms, USFWS, 1/90).

All projects possibly affecting any known Federally listed Threatened or Endangered Species were reviewed.

**C-3 Elk: Winter range capacity (population level), sex, age ratios, and habitat effectiveness.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Intillate Further Evaluation:**

Winter range capacity, sex, and age ratios: Decrease of 5 percent or more in 3 year running means.

Habitat effectiveness: Decrease of 10 percent or more in habitat effectiveness in any timber compartment.

*Elk Population Level and Sex Age Ratios*

In general the populations appear to be stable at this time. The reporting source for the statistical information is the MDFWP. The winter count of elk on the Jefferson Division (Little Belt and Castle Mountains) yielded 2,456 elk. (This does not include the Highwood Mountains). The winter count for elk on the Rocky Mountain Division yielded a high number of 475 north of Teton River, and a range of 2,300-2,500 elk on the Sun River Wildlife Management Area. In the area from the Elk Creek road to Montana Highway 200 (Rogers Pass) there were about 600 elk counted. Personal conversation with MDFWP biologist believes this population will increase in the next few years due to the Canyon Creek fire.

Summary of elk population numbers 1980-1989 running means is as follows:

ELK (Numbers)

Description	1980 1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
High - Jefferson Division	2918		2360	2456							
Low - Jefferson Division	2522										
High - Rocky Mtn Division	2774			3575							
Low - Rocky Mtn Division	2558			3375							

It is anticipated that the MDFWP will complete their report by June 1990 which will provide the data for all years.

The figures for High - Jefferson Division includes only information on the Little Belt and Castle Mountains, but does not include information for the Highwood or Crazy Mountains.

### *Elk Habitat Effectiveness*

Forest Plan standards and guidelines were used to evaluate land management activities.

Two meetings were held with the MDFWP to discuss a process that can be used to determine effects of timber sale activity in relation to elk vulnerability. A preliminary procedure was developed but still needs further work. Don Godtel, Forest Wildlife Biologist, has been appointed to a regional task force to address this same issue.

On the Jefferson Division, the emphasis continued to be on analyzing timber compartments in which road construction and timber harvest actions are planned which would change elk habitat effectiveness values. Spring Creek Environmental Impact Statement area (Musselshell Ranger District) was the only area that was evaluated this past year in regards to elk habitat. This resulted in evaluating 5 compartments (633-637) and the information will then be used to determine the effects of timber harvest. This analysis will be completed in FY 1990.

Coordination with hard rock mining activities and elk habitat took place for three different proposals on the Jefferson Division: Black Butte and Geis Creek on the Kings Hill Ranger District, and Cooks Flat on the Musselshell Ranger District. Coordination was in the form of regulating the timing and location of exploratory drilling.

Elk habitat in the south end of Belt Park on the Kings Hill Ranger District was not monitored in FY 1989. This area has been monitored for the past three years in response to a 1985 Congressional Inquiry on the effect of a change in road location (T14N, R7E, Sec. 27) on a known elk calving area. The three years of monitoring showed the same relative level of continued use of the area by elk for calving and security cover. This area will no longer be monitored because the road closure has been effective in allowing the area to be free of motorized vehicle disturbance during the calving period. Elk cows and calves have been seen adjacent to the road during the monitoring period.

#### **C-4 Bighorn Sheep and Mountain Goat: Winter range capacity (population level), sex, and age ratios.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Decrease of 5 percent or more in 3 year running means.

In general the bighorn sheep and mountain goat populations appear to be stable to increasing at this time. The reporting source for the statistical information is the MDFWP.

In checking with local MDFWP biologists, the Sun River bighorn sheep herd has recovered from the 1984-85 die off and has exceeded their target population range of 800-1000 head. There are plans for the winter of 1989-1990 to trap in the Sun River area and transplant sheep to different herds of the state. One of these transplant sites will be in the Blackleaf Wildlife Management Area. The reason for the trapping effort is to maintain the sheep level within the 800-1000 head range.

Discussions with MDFWP biologists, show a different trend in the bighorn sheep populations that lie north of the Teton River to Birch Creek. The total counts for Hunting District 441 show that the overall number of animals have held rather constant but ewe and lamb numbers have declined.

Summary of bighorn sheep population numbers 1980-1989 running means is as follows:

BIGHORN SHEEP (Numbers)

Description	1980 1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
High - Rocky Mtn Division	1010	1074	1073	1079							
Low - Rocky Mtn Division	791	874	873	879							

According to MDFWP figures the mountain goat population appears to be stable or a slight upward trend in Hunting District 415 but is stable or in a slight downward trend in Hunting District 414. The counts for 1988 were incomplete due to equipment failure and MDFWP was unable to complete the survey. The 1988 data is inadequate to show trends in the population for the year. In 1988 the boundaries of these two districts and the quotas were changed. These changes were still in place in 1989. The quotas will again be a discussion point for the 1990 hunting season.

Mountain goats were observed in two new areas of the Jefferson Division in FY 1989. During March 1989, while conducting aerial elk surveys, MDFWP biologist, observed one adult mountain goat in the Little Belt Mountains near Spring Creek. The location was north of "Round Grove" in the rocky rims which were blown free of snow. The goat had 5 to 6 inch horns, but the biologist was unable to determine the sex. MDFWP has no idea where the animal came from; there are no recent records of mountain goats in the Little Belt Mountains. In October 1989, two adult mountain goats were observed near Jensen Spring in the Highwood Mountains. The goats were believed to have originated from Square Butte located 8 miles to the east. The goats were observed by Forest Service employees from the Judith Ranger District.

Summary of mountain goat population numbers 1980-1989 running means is as follows:

MOUNTAIN GOAT (Numbers)

Description	1980 1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Rocky Mtn Divi- sion	104	89	80	119							

Due to equipment and weather problems the Montana Department of Fish, Wildlife and Parks was unable to complete the 1988 mountain goat survey.

**C-5 Other Big Game Species: Mule Deer, Whitetail Deer, Black Bear, Mountain Lion, population trend, sex, and age ratios.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Decrease of 10 percent or more in 3 year running means for mule deer.

In the past three fiscal years (1987, 1988, and 1989), the MDFWP has had restricted hunting seasons for mule deer in Hunting District 441 (North part of the Rocky Mountain Division). The first three weeks have been for antlered bucks with the last two weeks permit hunting for antlered (75) and antlerless (150) animals. This change was initiated because of the decline of larger bucks and at the request of the sportsman and land owners. The decline was attributed to a larger harvest in 1984 and 1985 resulting from early snows forcing the deer out of the back country onto their winter ranges where they were readily accessible by hunters. This strategy has worked as evident by the presence of a high buck to doe ratio (40:100) that exist at this time. This season will be maintained at least for one more year (1990). This is a comparison hunting district with Hunting District 442 that has had antlered hunting for the first three weeks and either sex for the last two weeks of the season. The buck to doe ratio in Hunting District 442 is 20:100.

These changes in hunting season regulations have been supported by the Forest.

Forest Plan Amendment Number 3 deleted the need to monitor Whitetail Deer, Black Bear, and Mountain Lion population trends as the data for these three species is not available for National Forest land.

**C-6 Small Game (Blue Grouse): Harvest level.** No further monitoring will be accomplished on this item as recommended by Forest Plan Amendment Number 3.

**C-7 Furbearer (Beaver & Bobcat) Special Interest (Lynx & Wolverine): Harvest level.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** 3-years (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Decrease of 10 percent or more in average trapper take from previous reporting period.

No further monitoring will be accomplished on this item as stated in Forest Plan Amendment Number 3. Data on these species is available only at a State level and is lumped for both private and public lands. The harvest level is not a reliable measurement of a population as it is heavily influenced by the fur market. In FY 1989, no sightings of wolverine or lynx were reported on the Jefferson Division. One wolverine was sighted on Prairie Reef and one track in the North Fork of Waldron Creek was observed on the Rocky Mountain Division. No lynx sightings were reported on the Rocky Mountain Division.

**C-8 Old Growth Habitat (Goshawk): Active nesting territories.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Decrease of 10 percent or more in active nesting territories.

In the past the draft R-1 Goshawk Habitat Suitability (HSI) model was used as a basis for selecting old growth nest stands within the Douglas fir/mixed conifer timber type. Timber stands located at elevations above this Douglas fir/mixed conifer timber type were dominated by lodgepole pine and contained subalpine fir or spruce. These Douglas fir/mixed conifer timber type stands were prioritized on the basis of proximity to meadows, seeps, springs, streams, or other environmental factors which contributed to the diversity of plant and animal life beyond that visible in surrounding stands. The Forest is refining this procedure which will be completed during FY 1990.

The Forest is funding a wildlife Cooperative Education position in which the student will complete a Master's study on old growth for the Forest. The main thrust of the study will be to define old growth in the Douglas fir types and to test the nesting portion of the R-1 goshawk HSI model. The student has identified over 40 suitable stands. In FY 1990, 10 stands known to have been used by goshawks for more than two years as well as the 40 identified stands will be analyzed. In addition, two new goshawk nests were located on the Rocky Mountain Ranger District.

Personnel provided input into the Regional goshawk habitat model revision and collected prey remains from active nests for analysis. Food habits data will be used to evaluate existing and future goshawk foraging habitat.

Old growth habitat was evaluated on the Spring Creek Environmental Impact Statement project area. This encompassed about 37,000 acres split into five different compartments. It was found that all compartments met the 5 percent minimum Forest Plan standard.

Summary of FY 1987 through FY 1989 goshawk nesting territories is as follows:

GOSHAWK (Nesting Territories)

Description	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Nesting Territories	8	9	11							
Territories Monitored	3	7	7							

**C-9 Special Interest Species (Golden Eagle, Prairie Falcon): Nesting territories.**

**Frequency of Measurement:** 100 percent sampled of selected nesting territories annually.

**Reporting Period:** 3-years (FY 1989, FY 1992, and FY 1995).

**Variability Which Would Initiate Further Evaluation:** Reduction in occupied nesting territories of 10 percent or more from previous reporting period.

The Forest Plan requirement is to monitor this activity at least once every three years. This item was formally monitored in FY 1989. Eleven of the 47 golden eagle and 6 of the 52 prairie falcon nests were monitored on the Rocky Mountain Division. Golden eagle and prairie falcon activity was confirmed at two eyries on National Forest land, but no fledglings observed. A new prairie falcon nest with two young was located on National Forest land.

An agreement has been completed with the local Audubon Chapter for survey work for the spring-summer of 1990. They will survey the eagle and falcon nest sites that were identified during the Raptor Research that was done on the Rocky Mountain Ranger District in conjunction with the Interagency Rocky Mountain Front Guidelines.

Limitations on funds and management emphasis to complete National Environmental Policy Act (NEPA) documents restricted the monitoring of nests in FY 1989 on the Jefferson Division.

Summary of golden eagle nesting territories is as follows:

**GOLDEN EAGLE (Nesting Territories)**

Description	Pre 1987	1989	1992	1995
Nesting Territories <sup>1</sup>	21	47		
Territories Monitored	-	11		

Summary of prairie falcon nesting territories is as follows:

**PRAIRIE FALCON (Nesting Territories)**

Description	Pre 1987	1989	1992	1995
Nesting Territories <sup>1</sup>	30	53		
Territories Monitored	-	6		

<sup>1/</sup> Data is for only the Rocky Mountain Ranger District and is incomplete prior to 1989.

**C-10 Cavity Nesting Habitat (Northern 3-Toed Woodpecker): Percent optimum habitat.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** 5-years (FY 1991).

**Variability Which Would Initiate Further Evaluation:** Reduction in snags to below numbers needed to maintain minimum viable population level in any timber compartment.

The Forest Plan requirement is to monitor this activity at least once every five years. The item was formally monitored in FY 1989 on three timber sales: Williams Mountain, Lower Moose Creek, and Lake Creek on the Kings Hill Ranger District. The results show that in these three timber sales the snag density is below the standards in all cutting units surveyed (792 acres), except for one 25 acre unit. Other incidental monitoring was conducted in connection with wildlife input to timber sale planning and as part of post-timber sale posting of wildlife tree signs on snags.

The Pasture Gulch area on the Musselshell Ranger District was surveyed once for pileated woodpeckers in conjunction with Goshawk surveys. No pileated activity was discovered. However, more time is needed to be spent to make any conclusions as to the abandonment of the area by the pair that has been sighted in the past.

In FY 1989, only a portion of the small timber sales within Forest Plan Management Area "B" were monitored. Initial impressions are that these areas have not had a proactive snag management plan implemented, and those that do, continue to be impacted by woodcutting activity.

In FY 1989 the snag management issue was identified in the Mill-Lion Timber Sale Environmental Assessment, Moose Creek Timber Sales Environmental Assessment, as well as input to small timber sales.

Summary of FY 1987 through FY 1989 commercial and personal use firewood removal is recorded in E-9 of this report.

**C-11 Aquatic Habitat Condition (Cutthroat Trout, Brook Trout, Rainbow Trout): Habitat quality (Coordinate with F-7 and F-8).**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** 3-years (FY 1989, FY 1992, and FY 1995).

**Variability Which Would Initiate Further Evaluation:** Predicted decrease of 5 percent or more (below planned level) in fish habitat capability based on predicted or actual changes in water quality or fish habitat parameters in any stream or lake.

Stream gravels used by trout for spawning was monitored on six streams in FY 1989. Deadman Creek on the Kings Hill Ranger District is sampled each year as part of an evaluation of the effects of road construction on fish habitat. Sampling on the other streams was conducted as part of the initial collection of information used to describe existing conditions of fish habitat in selected drainages.

Sampling conducted on two sections of Deadman Creek was evaluated each year from FY 1986 through FY 1989. Results clearly indicated that spawning gravels were degraded in the stream reach below road construction activities while little change was found to occur in the quality of stream gravels upstream from

the road construction activities. This example does not typify the effectiveness of Best Management Practices (BMPs) in preventing sediment delivery to the stream as important departures from the BMPs occurred during the culvert installation and associated road drainage during construction in August of 1986. The specific BMPs were detailed in the construction contract and resulted in a violation that required a stop order until corrective action could be taken. These departures from good construction practices (BMPs) caused the influx of sediment to the stream. The need for an additional BMP, requiring prompt completion of culvert installation, was also identified. Monitoring of sediment, concurrent with monitoring of suspended sediment transport and streamflow (monitoring item F-7), will indicate the persistence of the degradation and the possible effectiveness of any mitigation.

The COWFISH model was used to assess condition of fish habitat on stream reaches judged to be sensitive to the impacts of livestock grazing. Only initial reviews have been conducted on most of the stream reaches because year to year changes are too slow to measure unless a change in management is initiated. Five stream reaches were evaluated in FY 1989. In general, the values obtained from the COWFISH model indicate that fish habitat conditions are fair on many of the streams, although they are well below potential. Streamside shrub vegetation was being overbrowsed on all of the streams evaluated, except for two streams on the Rocky Mountain Division.

Post-fire monitoring of fish, stream habitat, and water quality were conducted for two fires of the 1988 season, Gates Park and Canyon Creek. Fish population and stream habitat data were collected from the North Fork Sun River, Elk Creek, and Dearborn drainages. Selection of drainages to be sampled was coordinated with the Montana Department of Fish, Wildlife and Parks. Approximately 32 miles of stream were surveyed. The composition, structure, and abundance of fish populations were sampled using a battery-powered electrofisher. Habitat data including, alkalinity, temperature, channel type, riparian vegetation, pool/riffle/run ratio, percent of fine sediments were also collected. The percentage of fine sediments was determined using the substrate grid technique.

Summary of FY 1987 through FY 1989 aquatic habitat condition is as follows:

AQUATIC HABITAT CONDITION (Streams Sampled)

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Stream Intragravel Sediment	-	4	4	6							
Stream COWFISH Model	-	2	3	5							

**C-12 Threatened and Endangered Habitat Improvement Outputs, Wildlife & Fish Habitat Improvement Outputs.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:**

Threatened and Endangered Habitat Improvements: Accomplishment 10 percent below Forest Plan level over 5-year average.

Wildlife and Fish Habitat Improvement Outputs: Accomplished 20 percent below Forest Plan level over 5-year average.

All variations below targets are attributed to funding below Forest Plan levels.

The following table summarizes FY 1987 through FY 1989 wildlife habitat improvement accomplishment in comparing what the Forest Plan states and what was actually completed:

(WILDLIFE HABITAT IMPROVEMENT)

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Non-Structural (Wildlife) (Acres)	600	300	1400	1392							
Non-Structural (Fish) (Acres)	5	2	0	10							
Non-Structural (T&E) (Acres)	100	0	0	0							
Structural (Wildlife) (Structures)	10	2	0	3							
Structural (Fish) (Structures)	25	16	19	11							
Structural (T&E) (Structures)	0	0	0	0							

The Forest has over accomplished in the habitat improvement (Non-structural wildlife acres and non-structural fish acres) while the other activities have not met Forest Plan targets. A habitat improvement program has been developed that provides for a more accurate accounting of the potential for habitat improvement on the Forest.

**C-13 Oil and Gas Activity/Wildlife Monitoring Rocky Mountain Front.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Any indication of downward population trend in species/management guidelines related to oil and gas activity.

A permit was granted to EPS to bury a gas production line from a tank battery and construct separation facilities at the 1-13 well site in Blackleaf Canyon on the Rocky Mountain Ranger District. This permit was coordinated with the MDFWP and the Interagency Rocky Mountain Front Wildlife Guidelines were used. This project had minimal impact on wildlife habitat because the line was buried in the road right-of-way and took 14 days to complete. This project had no effect on any wildlife populations within the area.

RANGE

**D-1 Range Outputs.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Plus or minus 10 percent of target.

Summary of Forest Plan 10-year average Range Management targets and actual accomplishment for FY 1987 through FY 1989 is as follows:

RANGE

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Permitted Grazing Use (M AUM)	71.1	70.5	72.3	72.4							
Improvement Non-structural (Acres)	1329	1999	2433	1607							
Improvement Structural (Structures)	40	30	18	26							
Range Resource Plans	10	5	4	4							

RANGE (continued)

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Noxious Weed-Chemical/Manual (Acres)	600	772	616	636							
Noxious Weed-Biological (Acres)	-	370	150	222							

M AUM = Thousand Animal Unit Month.

Permitted grazing use, Thousand Animal Unit Month (M AUM), in FY 1989 is within 2 percent of the Forest Plan projection and therefore requires no further evaluation. Permitted use is based on the grazing permits issued and estimates of recreation pack stock use before the grazing season begins. At the end of the grazing season the actual grazing use is gathered and reported. Actual grazing use in FY 1989 was 58.2 M AUM. The ten year average actual use (1980 through 1989) was 65.2 M AUM. The decline in actual grazing use in FY 1989 was a result of resting some allotments because of drought and fires in 1988.

Nonstructural Range Improvements in FY 1989 are 121 percent of the Forest Plan standard variability limit.

Structural Range Improvements in FY 1989 are 65 percent of the Forest Plan standard variability limit and Range Resource Plans are only 40 percent of the Forest Plan standard variability limit.

Reasons for these deviations are as follows:

*Nonstructural Range Improvement* - The over accomplishment in prescribed fire used for range management reflects the scheduling of logical burning units.

*Structural Range Improvement* - The under accomplishment in structural range improvements reflects the lower budget in range improvement in FY 1989 than is scheduled in the Forest Plan. Continued funding at this level will result in under accomplishment in structural range improvement. Without these investments in range improvement during the first decade of Forest Plan implementation, it is unlikely that the increase in permitted grazing use that is scheduled in the second decade of the Forest Plan will be possible.

*Range Resource Plans* - The under accomplishment in allotment management plans (AMP) is a result of budget and targets for this activity that are below the Forest Plan level. The Region did not assign allotment management plan (AMP) targets to the Forest in FY 1989 at this budget level. Funding for range management must increase to the Forest Plan level in order for allotment planning to reach the priority to accomplish the Forest Plan target level of 10 allotment management plans per year. Even at this Forest Plan level the Forest will continue to have a high percentage of AMPs that are outdated. See monitoring item D-4 for further evaluation and discussion.

**D-2 Range Conditions and Trend.**

**Frequency of Measurement:** 25 allotments per year which will allow all Forest allotments to be sampled every 10 years.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:**

Condition - Acres of range in fair or less condition that have not shown any improvement in condition score during the monitoring interval (10 years).

Trend - Any acres now in downward trend which were previously (at the last reading) stable or in an upward trend.

Trend - Any acres in downward trend which still show a downward trend after another monitoring interval (10 years).

There are 276 condition and trend studies on 243 range allotments on the Forest. Most of these are on the 173 type A priority livestock grazing allotments. There were 8 condition and trend studies monitored on 4 allotments of the Forest in FY 1989. These Ecodata studies were initiated inside and outside of riparian exclosures, constructed in FY 1989, to monitor changes in range and vegetation in riparian habitats resulting from livestock grazing. Several years of subsequent re-readings of Ecodata will be required to determine trend.

Summary of FY 1987 through FY 1989 range condition and trend studies is as follows:

RANGE CONDITION AND TREND (Each)

Description	Existing	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Condition & Trend Studies	276	0	28	8							
Allotments Monitored	243	0	12	4							

The level of range condition and trend monitoring in FY 1989 is below the Forest Plan standard variability limit for this activity. At the FY 1989 rate of monitoring 4 allotments per year, it would take about 60 years to monitor all of the allotments. This is 6 times the Forest Plan standard of 10 years. The 173 priority type A allotments could be monitored at this level within 43 years, which is over 4 times the Forest Plan standard of 10 years.

**D-3 Supply.**

**Frequency of Measurement:** Annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** More than 1 percent reduction in suitable range acres from previous year. Cumulatively, any reduction of 3 percent or more in suitable range acres over a 5-year period.

Suitable range for FY 1989 is 249,350 acres. This slight increase in suitable range acres reported during FY 1989 is less than a 0.1 percent change from the FY 1987 and FY 1988 reports.

Summary of FY 1987 through FY 1989 suitable range acres is as follows:

SUITABLE RANGE (Thousand Acres)

Description	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Suitable Range	249.2	249.2	249.3							

**D-4 Allotment Management Plan status.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** 5-years (FY 1991).

**Variability Which Would Initiate Further Evaluation:** If more than 10 percent of the allotment plans are outdated. Plans approved more than 15 years ago (before 1975) are considered to be outdated.

Only priority type A allotments are considered. These are cattle, sheep, and horse allotments; excluding all administrative pastures, special use pastures, and commercial packer grazing areas.

A summary of the number of allotments and allotment management plans follows:

Category	Number of Allotments	Percent of Allotments
Total allotments (priority type A)	173	100
Total allotment management plans	145	84
Allotments without plans	28	16
Outdated plans (approved before 1975)	73	42
Plans that will become outdated during this decade (approved 1975-1981)	38	22
Total allotments outdated by the end of the decade (1996)	139	80

There are 28 allotments without an allotment management plan (AMP) and another 73 allotments that have outdated AMPs, approved before 1975. Within the balance of the first decade of the Forest Plan (through 1996) another 38 allotments (approved 1975-1981) will become outdated. A total of 139 allotments (80 percent) would have outdated plans by the end of the decade, if no further allotment planning were done.

This data shows a major departure from the Forest Plan standard of "less than 10 percent of AMPs outdated." To correct this situation within the first decade of Forest Plan implementation (through 1996) will require 20 AMPs per year. Four new AMPs and sixteen revisions must be completed per year to stay within the Forest Plan standard by the end of the first decade.

The projected outputs for AMPs in the Forest Plan are only 10 AMPs per year. At this level of allotment planning the Forest will remain behind the Forest Plan standard of less than 10 percent of AMPs outdated. At 10 per year, 70 allotments would receive allotment planning by the end of the decade, but 69 allotments (40 percent) would remain unplanned or have outdated AMPs.

In FY 1989, the Forest accomplished 4 AMPs. Two of these were revisions of existing plans approved after 1981, thus not contributing to the backlog. At the rate of 4 AMPs per year, 28 AMPs would be accomplished to the end of the decade, leaving 111 allotments (64 percent) unplanned or with outdated-AMPs.

It is apparent from this evaluation that to meet the Forest Plan monitoring standard (no more than 10 percent of AMPs outdated) will require a higher output of allotment planning than is now targeted in the Forest Plan, or currently being programmed. Funding for range management on the Forest must be increased above the current level in order to meet this objective. Allotments must be carefully selected by priority, when programming allotment planning, to insure that the backlog is reduced. Only priority type A allotments that are unplanned, or currently have plans approved before 1982, will contribute to reducing the backlog of outdated AMPs.

Summary of FY 1987 through FY 1989 range allotment management plan accomplishment is as follows:

ALLOTMENT MANAGEMENT PLANS (Each)

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
New Plans	10 <sup>1</sup>	2	0	0							
Revision of Existing Plans	-	3	4	4							

1/ Includes both new and revision of existing Allotment Management Plans.

TIMBER

**E-1 Assure silvicultural management prescriptions are best suited to management area goals with all resources considered.**

**Frequency of Measurement:** One sale annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** A departure from management prescription.

An interdisciplinary sale review was conducted on the Lower Dry Wolf Timber Sale on the Judith Ranger District. The review group felt that the prescriptions are appropriate to meet the Forest Plan Management Area B goals. Shelterwood harvest is appropriate for regeneration of these types of sites. Concern was expressed on the implementation of the prescription, because inadequate dead shade and scarification could significantly extend the regeneration period. A suggestion was made that thinning of the advance clumps of regeneration be delayed until the new regeneration is tall enough to offer some hiding cover.

**E-2 Assure prescription not primarily chosen on basis of greatest dollar return or greatest timber output.**

**Frequency of Measurement:** One sale annually.

**Reporting period:** 5-years (FY 1991).

**Variability Which Would Initiate Further Evaluation:** Test management area outputs against those predicted.

Individual tree marking of the Douglas-fir types resulted in a direct cost to the government and a reduction in immediate financial returns from the stands. It will result in greater success in regeneration of the sites and will soften the transition from the mature stand to the establishment of the new stand.

Evaluation for the entire Forest will be done during the FY 1991 review.

**E-3 Assure openings comply with size limits and are periodically evaluated for appropriateness.**

**Frequency of Measurement:** One sale annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Unacceptable results of an Interdisciplinary Team review.

Management guidance for the Lower Dry Wolf timber sale on the Judith Ranger District was provided by Part 1 of the Forest Multiple Use Plan. A majority of the sale area was within the Dry Forest Zone with a lesser acreage in the General Forest Zone. The Lewis and Clark Forest Plan and Northern Regional Guides had yet to be developed and approved. Cutting units for this sale were cruised and traversed in 1980 and 1981. Cutting units 2 and 3 are 53 and 79 acres respectively and share a common boundary. Individually and collectively they exceed the 40 acre limitation identified in The Northern Regional Guide (6/10/83) for openings created by even-aged harvest. Other units do stay within the limitation. This sale was an unoffered deficit sale in February 1982. In June of 1982 the sale package was evaluated using the Value Analysis/Value Engineering (VA/VE) process and in August of 1982, a timber purchaser requested that the sale be advertised. Bid opening was accomplished in May of 1983. Sale was later third parted, cancel for breach, and readvertised and awarded in December 1987. Unit configurations were not changed after the sale was modified to stay as close as possible with the intent and conditions of the original sale.

Discussion by reviewers, including landscape ecology concepts versus dispersed settings concepts, came to the conclusion that the combined size of the two units using today's direction is too large to meet management objectives within Forest Plan Management Area B. The impact can be mitigated by staggering the timing and pattern of overstory removal from these units in the future.

**E-4 Assure timber offered does not differ from allowable sale quantity (ASQ) for 10-year period.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** More than plus or minus 20 percent annually or more than plus or minus 10 percent over a 5-year period.

The following discusses the total timber program and the allowable sale quantity for the Forest:

During FY 1989, the Forest sold 30 percent of the Forest Plan total timber program volume. The Forest sold or offered 12.1 million board feet (MMBF). Of this amount, 4.5 MMBF was current year sell, 2.4 MMBF (Smith Flat) on the Judith Ranger District was volume sold that had been appealed and sell credited to the FY 1987 sell program, 0.1 MMBF (Cabin Creek) on the Judith Ranger District was offered but not sold, and 5.1 MMBF (Moose Park) on the Kings Hill Ranger District was prepared and advertised, but appealed and the advertisement withdrawn.

	FOREST PLAN(MMBF) <sup>1</sup>	1989 TARGET (MMBF)	1989 ACTUAL (MMBF)
Volume Sold:			
Regular Program			
Live Timber			
A. Chargeable	11.0	12.2	2.3
B. Nonchargeable	1.0	0.5	0.3
Mortality Timber			
A. Chargeable	1.0	1.8	1.5
B. Nonchargeable	1.0	0.6	0.4
TOTAL VOLUME	14.0		4.5
Total Volume		15.1	4.5
Percent of Total Volume Sold			30%
Volume Not Sold:			
Regular Program (Chargeable)			
Volume Offered But Not Sold			0.1
Sold in Subsequent Years			0.0
Volume Appealed			5.1
Sold in Subsequent Years			2.4
TOTAL NOT SOLD			5.2
Total Subsequently Sold			2.4
<b>TOTAL VOLUME FY 1989</b>	<b>14.0</b>	<b>15.1</b>	<b>6.9</b>

<sup>1/</sup> (MMBF) million board feet

Summary of FY 1987 through FY 1989 timber sold or offered is as follows:

TIMBER SOLD OR OFFERED (Million Board Feet)

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Volume Sold	14.0	7.9	8.8	4.5							
Volume Offered but not sold	-	1.3*	-	0.1							
Volume Appealed	-	2.5	7.2	5.1							
Volume Sold From Previous Fiscal Years	-	-	(1.9)	(2.4)							
Total	-	11.7	16.0	9.7							

\* Reduced by 620 MBF (Last Chance Salvage Sale on the Kings Hill Ranger District) from FY 1987 Monitoring and Evaluation report per 2430 memorandum, dated 11/12/87 from Zone Timber, Helena National Forest and added to FY 1988 sell accomplishment.

Summary of FY 1987 through FY 1989 annual timber sell program is as follows:

TIMBER PROGRAM (Million Board Feet)

Description	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Annual Forest Sell Program	11.6	14.8	15.1							

Timber sale appeals has kept the Forest from making its Timber Sale Targets. The Forest's goal is to have National Environmental Policy Act documents approved two years in advance of a project. To accomplish this, the Forest has reorganized its workforce to place more emphasis on Forest Plan implementation.

The key to this monitoring item is how well the Forest is doing in meeting the allowable sale quality over the 10-year period. The annual summary shown consists of chargeable live and dead volume that has been sold. Appealed volume and volume of offered but not sold sales are not included until the sale is actually sold.

Summary of FY 1987 through FY 1989 allowable sale quantity is as follows:

ASQ (Million Board Feet)

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Allowable Sale Quantity (ASQ)	12.1	7.1	9.1	6.2							

**E-5 Assure restocking is in progress within 5 years.**

**Frequency of Measurement:** 1, 3, and 5 years (FY 1987, FY 1989, and FY 1991).

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Unacceptable results of an Interdisciplinary Team review.

Stocking surveys indicate that all stands planted within the past five years and 91 percent of stands where natural regeneration has been initiated within the past five years are either certified as being adequately stocked or are on a trajectory to meet adequate stocking within the desired time frame. Stocking surveys taken during the first year, and occasionally during the second year after site preparation, often do not have adequate numbers of seedlings to indicate whether or not the stand is proceeding toward the desired level of stocking. If the stand is still below desired levels at the time of the third year examination, then it will be evaluated to determine if treatment is needed to bring it to that level.

**E-6 Assure timber acres harvested are as projected.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** 5-years (FY 1991).

**Variability Which Would Initiate Further Evaluation:** More than plus or minus 10 percent deviation over a 5-year period.

The Forest Plan projected that annual harvest would average about 1,800 acres. 786 acres were harvested in FY 1989. The average harvest is down due to the backlog of timber sales not being offered because of appeals and noncompletion of NEPA documents. Harvested timber volume in FY 1989 is 11.7 MMBF. FY 1989 volume under contract is about 26.4 MMBF.

Summary of FY 1987 through FY 1989 timber volume under contract, acres, and volume harvested is as follows:

**TIMBER UNDER CONTRACT AND VOLUME & ACRES HARVESTED**

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Volume Under Contract (MMBF) (1)	-	29.1	26.4	21.9							
Acres Harvested (2)	1,800	1,144	775	786							
Volume Harvested (MMBF) (3)	-	16.8	11.1	11.7							

(1) Data for Volume Under Contract for 1987 and 1988 has been adjusted to include estimates for per acre material (PAM).

(2) Data for Acres Harvested for 1987 and 1988 have been adjusted based on updated Timber Stand Management Record System (TSMRS) output.

(3) Does not include personal firewood volume.

**E-7 Assure accomplishment of thinning and other silvicultural treatments as projected in plan.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** 5-Years (FY 1991).

**Variability Which Would Initiate Further Evaluation:** More than plus or minus 10 percent deviation over a 5-year period.

The following chart indicates accomplishment of timber stand improvement (TSI) and other silvicultural treatments:

TIMBER STAND IMPROVEMENT

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Silvicultural Exams (Thousand Acres)	15.5	30.6	33.9	-	-	-	-	-	-	-	-
Silvicultural Exams (Thousand Acres)	28.0	-	-	25.9							
Reforestation (Appropriation \$) Acres	54	0	225	67							
Reforestation (K-V) Acres	270	1064	490	0							
Thinning (TSI) (Appropriation \$) Acres	200	483	441	307							
Thinning (TSI) (K-V) Acres	0	125	12	0							
Release Acres	-	205	127	195							

The Forest in FY 1988, in conjunction with Regional Objectives and Forest Plan Amendment Number 3, accelerated the stand examination program from 15.5 thousand acres to 28.0 thousand acres in order to complete the timber data base for use in the next round of Forest planning.

Most reforestation on the Forest is accomplished by natural regeneration. Most of the site preparation is now performed by the purchaser, and thus does not show up in either the appropriated or Knutson-Vandenberg (KV) categories. Thus KV treatments are expected to be at the average level over the five year period.

Thinning accomplishment have exceeded Forest Plan targets. The Cross Creek burn (1970) and many of the young stands created by harvest in the late 1960s and early 1970s are showing evidence of reduced growth and thus are being thinned. The variation of plus 10 percent for the decade will very likely be exceeded.

Fuel treatments with brush disposal funds are tied closely to the acreage harvested in the past two years. Although there will be large fluctuations in individual years, average acreages should be achieved over the five year period (Refer to P-5 Fuel Treatment Outputs).

This item will be completely evaluated in FY 1991.

**E-8 Insure harvest by even-age management is compatible with resource values.**

**Frequency of Measurement:** One sale annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Unacceptable results of an Interdisciplinary Team review.

The review team for Lower Dry Wolf timber sale on the Judith Ranger District agreed that even-aged systems are appropriate to meet the Forest Plan Management Area B objectives and the needs of these particular sites except that some of the openings exceeded current opening standards (See description for E-3). Steps have been taken to assure that units are kept to a size which is compatible with resource goals and current management direction.

**E-9 Firewood removal.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Use increase exceeds 10 percent per year.

The Environmental Assessment and Lower Dry Wolf timber sale package provided for decking of unmerchantable material at landing and for closing temporary roads at least one year after unit acceptance. In FY 1989, 3.2 million board feet of personal use firewood was removed from the Forest.

Summary of FY 1987 through FY 1989 commercial and personal use firewood removal is as follows:

COMMERCIAL AND PERSONAL USE FIREWOOD REMOVAL

Description	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Commercial Firewood Permits Issued	78	44	73							
Commercial Firewood Sold (Cords)	3046	1410	2337							
Personal Use Firewood Permits Issued	1487	1023	1401							
Personal Use Firewood Sold (Cords)	6937	4611	6416							
Personal Use Firewood Removal (MMBF)	3.5	2.3	3.2							

There has been a leveling-off in the demand for firewood from the Forest. It is expected that the use will probably continue at or near the current amount.

**E-10 Evaluate availability of lands classified as suitable/unsuitable.**

**Frequency of Measurement:** 5-years (FY 1991).

**Reporting Period:** 5-years (FY 1991).

**Variability Which Would Initiate Further Evaluation:** More than plus or minus 5 percent change in acreage.

The evaluation of land suitability is ongoing through area and project analyses. Data is being entered into the Timber Stand Management Record System data base to provide information for the planned evaluation to be accomplished in FY 1991 and for future Forest Plan revisions.

**E-11 Projected yields. (Growth Plots)**

**Frequency of Measurements:** 5-years (FY 1991).

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Standard error of 10 percent at 1 standard deviation.

The Forest established two new permanent growth plots and remeasured four existing plots during FY 1989.

Summary of growth plot establishment and remeasurement is as follows:

GROWTH PLOTS (Number)

Description	1979 1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Growth Plots Established	27	2	0	1	2							
Growth Plots Remeasured	7	2	2	0	4							

Efforts during the planning period (10-15 years) will be to continue the remeasurement so that at least each Growth Plot is remeasured on a 5-year interval in order to establish a base data file. The Forest is still on schedule to accomplish the remeasurement program. New plots will be installed to monitor growth and yield for treatments or conditions that are not being sampled yet.

At this time there is insufficient data available to run any type of comparison between the Growth Plot data and the projected yields of the Forest Plan.

When these Growth Plots were established, they were to be installed in stands that were scheduled for a timber activity within the next five years, other than a regeneration harvest; example, precommercial or commercial thinning. Therefore, Growth Plots that have had their planned timber activity accomplished and remeasurement completed have data only from one remeasurement.

Evaluation will be done in FY 1991.

## SOIL, WATER, AND AIR

### **F-1 Adequacy and Cumulative Effects of Project Best Management Practices.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Projected deterioration of soil productivity or water useability.

Each proposed project with a potential for impact on soil or water quality is reviewed to determine the adequacy of the Project's Best Management Practices (BMPs) before it is approved to ensure soil productivity and water useability. Five projects were evaluated in FY 1989 to provide detailed BMPs required to protect soil and water quality. In addition, cumulative effects on water yield and sediment were evaluated as needed on these projects, as required by Forest-wide Management Standard F-3.

All of these projects provided adequate BMPs to meet water quality goals and State water quality standards. These standards require that all reasonable land, soil, and water conservation practices are used. The cumulative effects analyses indicated, in each case, that reasonable use of conservation practices would protect the beneficial uses and goals for the water resource and prevent deterioration of the soil or water.

### **F-2 Revegetation of temporarily disturbed areas and roads within 5 years.**

**Frequency of Measurement:** 75 percent sample 2 years after termination.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Unacceptable results of an Interdisciplinary Team review.

Projects completed under the Forest Plan with temporarily disturbed areas and roads are required to be revegetated within 5 years. A review two years after completion indicates the effectiveness of seeding required by the project and the need for any follow-up revegetation. Monitoring was accomplished on 10 projects plus the emergency rehabilitation project on the 1988 Canyon Creek Fire. One project, a trespass case, was reseeded; all other projects showed adequate erosion control and revegetation. Three of the projects, including the reseeded, showed a need for follow-up monitoring in FY 1990 to assure effective water bars and road closure. There has been no Interdisciplinary Team reviews indicating unacceptable revegetation or inadequate erosion control of temporarily disturbed areas.

In general, the revegetation on the fires of 1988, particularly on the Canyon Creek Fire, which was reseeded, was successful in most areas. This was partly because the 1989 growing conditions were exceptionally favorable. However, some severe sites, particularly south-facing, steep, shaly slopes, did not revegetate well, and severe erosion on these sites was evident. Revegetation or other suitable artificial erosion control is not feasible on these sites in the absence of overwhelming downstream values (such as life or residential development). These severe sites can be expected to contribute to downstream sedimentation and localized flooding potential until they naturally stabilize over a period of several years.

Several detailed monitoring efforts and research projects were initiated following the 1988 fires to enable the Forest Service to understand the effects of these large fires, the revegetation, and the watershed recovery following the fires. These studies are summarized below.

#### *A. Fireline, Seeding, and Noxious Weed Monitoring:*

Monitoring of the firelines, and other soil disturbance during the fire suppression activities was conducted to evaluate the effectiveness of the erosion control structures established on the firelines, the success of the seeded grasses and legumes, the vegetation recovery, and possible noxious weed infestations. On the Canyon Creek Fire, the Soil Conservation Service monitored State and private lands. The Forest Service monitored the National Forest lands. Monitoring was accomplished by walking the firelines to visually observe the conditions, and by re-photographing photo-points established in the fall of 1988. The results of this monitoring showed successful rehabilitation of disturbed areas and no new noxious weed infestations. Follow-up monitoring is needed in 1990 to confirm the results, particularly the noxious weed conditions, to allow for seedlings that may have established in 1989 to mature and flower.

#### *B. Remote Sensing for Fire Effects Mapping:*

Researchers at the Intermountain Fire Sciences Laboratory are conducting a study of the fire effects on vegetation using LANDSAT remote sensing methods in cooperation with the Lewis and Clark National Forest. The ECODATA fire monitoring plots established by the Lewis and Clark National Forest will be used as ground truthing to correlate vegetation recovery. The U.S. Environmental Protection Agency has included the Canyon Creek Fire in an Aerial Remote Sensing and Geographic Information System project which uses infra-red aerial photos of the fire area. The Forest cooperated in this project by providing ground control markers and coordinating with their existing aerial sensing program.

#### *C. Vegetation Monitoring*

##### *1. Initial Fire Effects on Vegetation:*

The Intermountain Forest Research Station is conducting a research project dealing with initial community composition of the 1988 fires in Region One. Lewis and Clark National Forest plots established as a part of this study included plots on the Canyon Creek, Iron Claims, and Lick Creek fires.

##### *2. Permanent Monitoring Plots:*

Monitoring of vegetative recovery included both photopoints and plot sampling using ECODATA methods. On the 70 plots sampled in 1989, total vegetative cover ranged from less than 1 percent to over 170 percent. This plot data and other observations show that there was a wide range in vegetative recovery, from only trace cover on severely burned, harsh sites with poor soils, to lush cover of forbs and grasses on better sites that were also severely burned. Areas sampled that had low or moderate fire severity were revegetating naturally and had adequate cover to prevent excessive erosion. Continued monitoring of the grass seeded areas is needed to determine whether the introduced species continue to provide cover or are replaced by native vegetation. Follow-up monitoring is also needed

to determine the rate of vegetative recovery on sites with low cover values that do not meet the Forest-wide Management Standards F-2.

**F-3 Water quality effects of activities in municipal watersheds.**

**Frequency of Measurement:** All projects.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Adverse water quality effects or violates water quality standards.

No activities were proposed or conducted that would disturb the soil or water resource in either of the two municipal watersheds on the Forest in FY 1989. Any projects to be conducted in municipal watersheds, as required by law, are first reviewed by the State Water Quality Bureau.

**F-4 Activities in riparian areas, flood plains, and wetlands.**

**Frequency of Measurement:** 50 percent of all projects.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Unacceptable results of an Interdisciplinary Team review.

Riparian areas include flood plains and wetlands, and activities conducted in them pose an added risk to water-related resources and to water quality. The only projects planned or accomplished in FY 1989 were five fencing projects intended to protect these areas, with only positive benefits to riparian values.

**F-5 Effects of other activities on watershed conditions.**

**Frequency of Measurement:** 20 percent of all projects.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Unacceptable management practices or land productivity.

Activities not in municipal watersheds nor in riparian areas may also have impacts on soil or water quality. A total of 12 such projects were reviewed in FY 1989. A minor departure from intent of BMPs was found in each of three projects because of inadequate water bars, skid trail locations, and filtering area. A major departure occurred on one project because of inadequate blading of the roadway and ditchwork. In spite of these departures, soil and water resources were either adequately protected, often with minor corrective measures immediately applied, or had only minor, temporary impacts. These projects will all need some follow-up in FY 1990 to be certain seeding success and erosion control is adequate.

**F-6 Elimination of soil and water restoration backlog.**

**Frequency of Measurement:** Annually.

**Reporting Period:** 5-years (FY 1991).

**Variability Which Would Initiate Further Evaluation:** Less than 50 percent by 1990; less than 100 percent by 1995.

Direction is that the backlog of soil and water restoration needs be eliminated by the year 1995. The Forest Plan identified a backlog of 373 acres of these restoration needs. Soil and water restoration was well-funded in FY 1989: the regular soil and water protection program provided 55 acres of restoration, plus an addition to this program from excess timber receipts provided an additional 54 acres of restoration, 43 acres of which resulted from the closure and drainage (with waterbars) of over 23 miles of primitive roads or trails previously used by off-road vehicles. This means a total of 166 acres of restoration has taken place over the last 5 years, a respectable degree of accomplishment toward meeting the Forest Plan goal.

Summary of soil and water restoration backlog accomplishment is as follows:

SOIL AND WATER RESTORATION (Acres Accomplished)

Description	Total Back-log	Pre 1987	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Soil/Water Restoration	373	21	26	10	109							

The Forest Plan target for Soil Inventory is 2,000 acres. In FY 1989, no acres were inventoried.

Summary of FY 1987 through FY 1989 soil inventory accomplishment is as follows:

SOIL INVENTORY (Acres Accomplished)

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Soil Inventory	2,000	0	0	0							

**F-7 Water and Stream Quality as affecting fish habitat and other uses: validation of estimations of sediment.**

**Frequency of Measurement:** Seasonal-continuous and annual.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Not meeting State or Federal water quality standards or significant (90 percent confidence) deterioration, by best available indexes.

Water quality monitoring did not identify any significant deterioration which would require immediate action. State or Federal water quality standards are met when all reasonable land, soil and water management, or conservation practices (BMPs) have been applied. The adequacy of these BMPs is determined through monitoring item numbered F-1, and the application and effectiveness of these BMPs is monitored in items numbered F-3, F-4, and F-5.

Data is required to validate estimates of sediment and to determine if water quality or fish habitat might deteriorate where estimates of effects are incorrect. Methods and intensity of validation and evaluation of sediment are still in a state of development. Considering this, sampling of representative streams by available techniques has been conducted over the last four years. The sampling in FY 1989 included five stations with regular (automated) sampling of suspended sediment along with a continuous record of streamflow and six streams sampled for intragravel sediment. This last years' sampling has been particularly meaningful because the amount and variation of streamflow has approached an "average" year, as opposed to the previous three years of drought. An "above average" year for streamflow is needed to provide a more reasonable balance to the analyses.

One of the stations sampled was reestablished to monitor the effects of the Gates Park fire on the North Fork Sun River. The station was an abandoned USGS stream gauging station located below the Gates Park fire and just above Gibson Reservoir. This station has 20 years of records available that are correlated with four snow courses in the North Fork Sun River drainage. The Bureau of Reclamation and the Greenfields Irrigation District are cooperating with the Forest Service to have the USGS maintain this station and to measure stream sediment there and compare it to baseline information. In addition, photopoints (some in FY 1988), channel condition surveys, grab samples, and erosion transects were established for the fires, and a sediment survey will be done for Gibson Reservoir to determine the amount of deposition between 1973 and 1988, as compared to the period between 1988 and 1993.

Preliminary results indicate that a large amount of sediment did come out of the fire area with the spring snowmelt in early May, and with late July and August thunderstorms. Unusual fall peak flow events accompanied by large amounts of ash and sediment were also observed in mid-October of 1988 and again in early November of 1989, at a time when the station was not operational. However, photopoints of the area and of the stream channels, as well as two erosion transects in one part of the Canyon Creek Fire area, indicate only a moderate amount of erosion, considering the size and intensity of the fires. The erosion transects indicate average removal of .01 to .03 foot in some of the Canyon Creek Fire area, and only a small percentage of that erosion would have been delivered as sediment to the stream channel. The fact that much more extensive erosion did not occur, particularly not in the stream channels, is apparently due to the relatively moderate snowmelt with no late heavy spring rains. The excellent conditions for vegetative growth this past year, as described in item F-2, will undoubtedly greatly reduce the erosion potential in future years.

**F-8 Riparian areas and streams: stream cover and pools.**

**Frequency of Measurement:** High-impact annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Significant (90 percent confidence) decline in condition.

Inventory of the condition of riparian areas and streams is presently conducted using the COWFISH model and shrub condition. Five streams were evaluated in FY 1989 by these methods. Additional analysis and additional years of data are necessary to indicate relative change in condition. Indication of further riparian condition requires classification. An initial draft classification system was developed by the Montana Riparian Association and published in August 1989 to provide a basis of ecodata plots for riparian monitoring and for emphasis in development of range allotment management plans. Some preliminary documentation of riparian sites has been accomplished with ecodata plots. Riparian areas and stream monitoring did not identify any significant decline which would require immediate action.

**F-9 Public Health.**

**Frequency of Measurement:** Monthly when in use.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Violates State or Federal drinking water standards per year.

During FY 1989, 37 Forest systems and 8 special use systems were opened for use. Thirty of the Forest Service systems and two of the special use systems were tested and operated in accordance with State and Federal Safe Drinking Water Acts. The remaining systems did not receive sufficient bacteriological testing.

An evaluation of this situation revealed that the problem was largely confined to two districts. Further analysis indicated that in both organizations individuals who had been trained and assigned the responsibility for sampling the systems had transferred out of the district organization. During the time that the position remained vacant and for the initial tenure of the replacement person, the responsibility was apparently lost. The matter has been placed on the agenda for a Forest Leadership Team meeting in an effort to redeem this management responsibility.

**MINERALS**

**G-1 Effect of Mining Activities.**

**Frequency of Measurement:** 100 percent annually of active operations on a monthly basis.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Adverse effect of Forest Service project on mineral activities or revision or departure from approved operation plans.

Review of Forest Service activities showed that no mining activities were effected by these projects.

All proponents of mining type prospecting and development proposals are required to submit a Notice of Intent, and in some cases, an operating plan prior to any surface disturbance. Three operating plans were reviewed during FY 1989. An environmental analysis is prepared and the proposal is approved, modified or denied, and subject to mitigation and application of the surface operating standards in the Forest Plan. All three of the operating plans resulted in activity on the ground.

During the summer of 1989 the most complex operating plan involved drilling shallow holes by a mining company in the vicinity of Cooks Flat on the Musselshell Ranger District. An analysis was conducted on the applications and specific mitigation included:

- Activity was limited to the actual drill sites, no access roads were constructed, the drilling took place using all-terrain vehicles.

- A reclamation plan was agreed to in advance and a performance bond was established; and

- A Cultural Resource Inventory was completed that resulted in significant discoveries of cultural sites.

Other on the ground activity included operation of a small decorative building stone quarry south of Stanford, Montana, and continued exploration and development work for sapphires along Yogo Creek southwest of Stanford.

#### **G-2 Effect of Geophysical Seismic Prospecting.**

**Frequency of Measurement:** 100 percent of active operations on a biweekly basis.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Adverse effect upon surface resources or departure from conditions of the approved permit.

There were no requests for geophysical seismic prospecting in FY 1989.

#### **G-3 Effect of Drilling.**

**Frequency of Measurement:** 100 percent of active operations on a weekly basis.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Adverse effect upon surface resources or departure from conditions of the approved permit.

An Environmental Impact Statement (EIS) is being prepared on two pending Applications for Permit to Drill by Chevron Corporation and Fina Oil and Chemical Company, in the North End (RM-1) Geographic Unit on the Rocky Mountain Ranger District. In addition, the Forest is working with the Bureau of Land Management (BLM) on preparation of a field development EIS for the Blackleaf Canyon area on the Rocky Mountain Ranger District. Temporary approval was granted by the Forest, BLM, Montana Department of Fish, Wildlife and Parks, and the Teton County Commissioners for connecting a surface pipeline to a shut in gas well in Blackleaf

Canyon. The well was drilled in 1957 and re-completed in 1981. The temporary approval was granted pending completion of the Blackleaf EIS. An Environmental Assessment was completed for the entire length of the pipeline. Approximately 1,300 feet of the pipeline is on National Forest land. The pipeline will be continuously monitored during production.

**G-4 Rehabilitation of disturbed areas.**

**Frequency of Measurement:** 100 percent of activity on a weekly basis during rehabilitation. A final inspection will be made within 5-years after rehabilitation has been completed.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Rehabilitate less than 90 percent of disturbed areas.

Four mineral related proposals were reviewed and, prior to permit issuance, reclamation standards were established. Forest Plan Standard G-5 was applied to all proposals. Reclamation bonds were collected to cover the cost of each project, and retained until final reclamation standards are met. In addition, the Forest continued to assess past disturbed areas and develop a long term rehabilitation strategy.

**G-5 Minerals Availability.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Denial of more than 10 percent of proposed projects.

There have been no changes from the situation as shown in the Forest Plan.

The Forest Plan target for Mineral Management in FY 1987 and FY 1988 was 90 cases. In FY 1989, the Forest Plan target was increased to 160 cases. In FY 1989, 250 cases were reviewed and approved.

Summary of FY 1987 through FY 1989 mineral cases reviewed and approval is as follows:

MINERAL CASES (Each)

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Cases Reviewed	90	160	134	-	-	-	-	-	-	-	-
Cases Reviewed	160	-	-	250							
Cases Approved	-	160	134	250							

## LANDS

### **J-1 Compliance with use permits.**

**Frequency of Measurement:** As needed.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Unacceptable results or deviation from permits.

Special use permits on the Forest are generally up to date and are in conformance with current policy. The computerized Forest Land Use Report (FLUR) program is working well and has reduced time required for preparing bills and in gathering information for Regional Office requests.

New recreation residence permits were accepted by most permittees. FY 1988 recreation residence policy was appealed; permittees have been notified that some provisions of their new permit are void and may have to be revised upon finalization of the revised policy. This change has caused confusion and uncertainty for the permittees and additional work for employees to stay current with and explain the changes.

Proposed changes in fee determinations for communication authorizations and for minimum fee authorizations has also caused additional work in preparing mailings and answering questions for current and potential permittees.

On-the-ground administration of special use permits is primarily for health and safety problems as well as permittees who are not meeting their financial obligations to the Forest Service. The condition of special use facilities on the ground is generally acceptable.

### **J-2 Right-of-way Easements Accomplishment.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Less than 75 percent accomplishment of 5-year program.

The Forest Plan does not specify a level of accomplishment for the acquisition of rights-of-way easements. However, the Monitoring Section does refer to the Forest's 5-year program. The program for FY 1989-1993 was transmitted to the Forest Leadership Team on January 27, 1989 by the Forest Supervisor in a 5460 memo. The program for FY 1989 contains four road easements.

Two road easements, both on the existing Dry Wolf Road No. 251, were acquired. Two others on the Dry Fork of the Belt Creek Road No. 120 were scheduled but not acquired because of problems with encumbrances on the titles. Work will continue on these cases in FY 1990.

In addition, one trail easement although not scheduled, was acquired on the Smith Creek Trail south of Augusta, Montana. The total acquired is 75% and is therefore within the acceptable limits of variability.

Summary of FY 1987 through FY 1989 road and trail right-of-way easement program and acquisition is as follows:

EASEMENT ACQUIRED (Each)

Description	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Road R-O-W Program	4	7	4							
Road R-O-W Acquisition	3	1	2							
Trail R-O-W Program	1	1	0							
Trail R-O-W Acquisition	1	0	1							

**J-3 Land Ownership Adjustment Accomplishment.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Less than 75 percent accomplishment of 5-year program.

The Forest Plan does not specify a rate of accomplishment for this item except in the Monitoring Section where a reference is made to the Forest's 5-year Program. However, the Forest does not have an established Land Exchange Program but rather relies on opportunities that are forwarded by proponents. Other opportunities to acquire tracts which are desirable for National Forest System ownership are pursued as they develop.

The Forest Plan specifically says that "----it is not the intent of the Forest Service to pursue this direction (land exchange) except on a willing grantor basis." For this reason, it would be very difficult to "lock-in" on targets for accomplishments.

The Forest's annual target with the Region beginning in FY 1989 is 60 acres. In FY 1989 no lands were exchanged. The Forest was working on exchanging approximately 200 acres of Federal land which would have been completed in FY 1989. However, the decision to exchange lands was appealed and during the lengthy review process the land to be acquired was sold. In addition, an exchange involving approximately 3,000 acres of Lewis and Clark National Forest land was being negotiated for possible FY 1989 accomplishment. This process has been suspended until a recent offer to sell the private lands to the United States can be evaluated.

Summary of FY 1987 through FY 1989 land exchange program accomplishment is as follows:

LAND EXCHANGE ACCOMPLISHMENT (Acres)

Description	Annual Target	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Land Exchange	0	0	0	-	-	-	-	-	-	-	-
Land Exchange	60	-	-	0							

In FY 1989, the Forest did not complete any cases as a part of the Small Tract Act.

**J-4 Landline Location Accomplishment.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Less than 75 percent of the Forest Plan Target.

The Forest Plan target for landline location is 26 miles/year decadal average. In FY 1989 the Forest was funded for a target of 24 miles and actually accomplished 25 miles.

Summary of FY 1987 through FY 1989 landline location accomplishment is as follows:

LANDLINE LOCATION (Miles)

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Landline Location	26	14	21	25							

FACILITIES

**L-1 Road and Trail Construction and Reconstruction; Trails; Arterial and Collector Roads; Local Roads.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Plus or minus 20 percent of programmed construction and reconstruction accomplishment.

**ROADS** - The Forest Plan Road Program, as amended, provides for 9.0 miles of road construction, and 24.0 miles of reconstruction yearly which are further broken down to 20.0 miles for Capital Investment Program and 13.0 miles for the Timber Management Program. In FY 1989 the Forest constructed no miles and reconstructed 13.6 miles for a total of 13.6 miles under the Capital Investment Program. Under the Purchaser Credit Program no miles were constructed and 4.3 miles were reconstructed for a total of 17.9 miles of construction and reconstruction under all programs.

When considering the total miles constructed and reconstructed in both programs, the output was 46% under that projected by the updated Plan. This is not within the variability tolerance. Therefore, additional evaluation is required. An analysis revealed the following:

The reasons for the accomplishment shortfall were all NEPA related. Four timber sales involving a planned 18.3 miles of construction and 5.0 miles of reconstruction were not sold because of incompleting NEPA work or appeals. In addition, one Capital Investment Program project involving 3.7 miles of construction and 3.3 miles of reconstruction was not let because of incomplete environmental analysis.

Summary of FY 1987 through FY 1989 road construction and reconstruction as part of the Capital Investment and Timber Program is as follows:

ROADS (Miles)

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Capital Investment Road Construction	5.0	3.7	0.6	0							
Capital Investment Road Reconstruction	15.0	29.7	16.1	13.6							
Timber Purchaser Road Construction	4.0	0.0	2.3	0							
Timber Purchaser Road Reconstruction	9.0	0.0	4.2	4.3							

**TRAILS** - The Forest Plan, as amended, programs an average of 14.0 miles of trail construction and reconstruction annually. In FY 1989, a total of 12.8 miles of trail was reconstructed on the Forest. Therefore, the accomplishment was 91 percent of the Forest Plan target. Trail funding has increased in the past 2-3 years and good progress is being made in reconstructing unsatisfactory trails.

Trail construction and reconstruction was aided by volunteer efforts in FY 1989, similar to other years. The Great Falls motorcycle club helped solve some resource problems on trails in the Tenderfoot-Deep Creek area on the Kings Hill Ranger District and the Backcountry Horsemen groups provided volunteer assistance on the Rocky Mountain Ranger District.

The large fires on the Forest during 1988, particularly the Canyon Creek and Gates Park Fires in the Bob Marshall and Scapegoat Wildernesses on the Rocky Mountain Ranger District, had a large impact on the trail system. The fires caused concentrations of snags to fall across the trails and burned most of the signs and wood structures in the trails. These include corduroy, small bridges, water bars, and log cribbing structures. The initial downfall was removed as part of the fire rehabilitation effort in 1988. However, increased downfall is expected for several years and the structures will need to be rebuilt. These needs were identified in supplemental budget requests for fire recovery. In all, a total of 117 miles of trails were severely impacted. Total reconstruction and rehabilitation costs are estimated at \$199,500. Reconstruction will continue in 1990.

The accomplishment in FY 1989 was within the limits of variability for this monitoring requirement (plus or minus 20 percent of the goal). Therefore, no additional evaluation is required at this time. The budget trends indicate that the Forest Plan goals for trail construction and reconstruction will be met.

Summary of FY 1987 through FY 1989 trail construction and reconstruction is as follows:

TRAILS (Miles)

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Trail Construction and Reconstruction	10.0	8.5	-	-	-	-	-	-	-	-	-
Trail Construction and Reconstruction	14.0	-	13.3	12.8							

**L-2 Miles of roads open to public use.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Plus or minus 20 percent of target miles to be left open to public.

The Forest Travel Plan resulted in the following summation of road restrictions and closures. On the Jefferson Division, approximately 230 miles of roads are restricted either yearlong or seasonally to some forms of

motorized public use. On the Rocky Mountain Division, approximately 23 miles of roads are restricted either yearlong or seasonally to some forms of motorized public use.

It is estimated that there are approximately 1,480 miles of roads left open to the public. The Forest Plan does not establish any target miles to be left open to the public.

In FY 1989, no significant changes were made in the Forest Travel Plan, therefore, no monitoring was accomplished.

**PROTECTION**

**P-1 Assure harvest emphasizes the removal of high risk stands for mountain pine beetle attack and that timber sales are located to break-up continuous natural fuel accumulations.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** 5-years (FY 1991).

**Variability Which Would Initiate Further Evaluation:** Unacceptable results of an Interdisciplinary Team review, or if less than 70 percent of timber volume is programmed from high risk mountain pine beetle stands.

In FY 1989, 90 percent of the sawtimber sold on the Lewis and Clark National Forest was high risk lodgepole pine. Reviews of timber sale locations showed the Forest is continuing to breakup large concentrations of natural fuels. Future planning is also emphasizing removal of high risk lodgepole pine.

Summary of FY 1987 through FY 1989 removal of high risk lodgepole pine stands is as follows:

**REMOVAL OF HIGH RISK LODGEPOLE PINE (Percent)**

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Removal of High Risk Lodgepole	70	90+	80	90							

**P-2 Acres and volume of insect and disease infestations.**

**Frequency of Measurement:** Once annually.

**Reporting Period:** 5-years (FY 1991).

**Variability Which Would Initiate Further Evaluation:** Introduction of new insect or disease or spread of an existing insect or disease.

Insect and disease surveys conducted during the summer of 1989 showed no significant change in insect and disease infestation on the Forest. However, mountain pine beetle activity continues on the adjacent Helena National Forest.

**P-3 Management practices to ensure activities do not promote an increase in insect and disease organisms.**

**Frequency of Measurement:** Continuous.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Significant increase in insect and disease organisms.

No significant increase in insect and disease organisms has been observed. Post timber sale reviews showed that the Forest is meeting regional standards for slash disposal.

**P-4 Assure prescribe fire meets air quality standards.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Plus or minus 10 percent beyond standard guidelines.

The Forest burned over 3,500 acres for slash disposal, natural fuel treatment, wildlife habitat improvement, and range land improvement. There were no known complaints about any prescribed burning project affecting air quality.

**P-5 Fuel treatment outputs.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Plus or minus 25 percent of programmed targets.

In FY 1989, the Forest treated 1,053 acres of activity fuels and 1,020 acres of natural fuels. The Forest Plan shows a target of 1,470 acres of activity fuels and 700 acres of natural fuels per year. While both items are outside the variability level for FY 1989, the three year average is within the level.

Summary of FY 1987 through FY 1989 natural and activity fuels reduction is as follows:

ACTIVITY AND NATURAL FUELS (Acres)

Description	Forest Plan	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Activity Fuels	1,470	1,813	1,201	1,053							
Natural Fuels	700	665	863	1,020							

**P-6 Wildfire acres burned.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** October 1, 1988 - September 30, 1989 (FY 1989).

**Variability Which Would Initiate Further Evaluation:** Plus or minus 25 percent above projected average annual wildfire burned acres.

While the 1988 fire season was one of the driest on record, 1989 was one of the wettest on record (third wettest year in Great Falls). The Forest had 18 fires. All were less than one-half acre in size. Collectively, the burned was about 13 acres of National Forest land.

Summary of FY 1987 through FY 1989 wildfire acres burned is as follows:

WILDFIRE AREA BURNED (Acres)

Description	10-year average	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Acres Burned	497	37	174,162	13							

**P-7 Cost of Suppression and Protection Organization.**

**Frequency of Measurement:** Once annually.

**Reporting Period:** 5-years (FY 1991).

**Variability Which Would Initiate Further Evaluation:** Plus 5 percent increase in total costs.

The total cost of fire suppression and protection in FY 1989 was \$273,000. This is well below the 10-year average of \$590,000. This is the result of one of the wettest fire seasons on record.

Summary of FY 1987 through FY 1989 suppression and protection costs is as follows:

FIRE SUPPRESSION AND PROTECTION COSTS (Thousand Dollars)

Description	10-year average	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Fire Costs	590	379	6,361	273							

GENERAL

**I-1 Validation of cost and values used in the Forest Plan.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** 5-years (FY 1991).

**Variability Which Would Initiate Further Evaluation:** In general, plus or minus 25 percent; however very large cost items such as stump-truck costs would have a smaller degree of acceptable variability.

The Forest has completed the first step, updating Forest Service costs and validation of costs and values used in the Forest Plan. This work will be completed for the 5-year review.

**I-2 Effect of emerging issues or changing social values.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** Continuous.

**Variability Which Would Initiate Further Evaluation:** If issue cannot be dealt with under the Forest Information and Involvement Plan.

Public interest in the management of the Lewis and Clark National Forest continues to play a major role in the implementation of the Forest Plan. In addition to several new projects and issues, four ongoing projects carried into fiscal year 1989. While each Ranger District was involved with several smaller scale projects requiring public involvement, the key projects necessitating more extensive efforts because of the sensitivity of the issues involved were: Chevron/Fina Environmental Impact Statement (EIS) on Exploratory Oil and Gas Wells, Galt Land Exchange, Eligibility Determination for Wild and Scenic Rivers, Natural Prescribed Fire Program in the Bob Marshall Wilderness Complex, and Timber Sale Program (timber sale environmental assessment appeals and Timber Sale Program Information Report System - TSPIRS).

## **CHEVRON/FINA EIS:**

A decision was made to combine the analysis for the exploratory oil and gas drilling proposals from both Fina (Hall Creek) and Chevron (Badger Creek) in order to provide a more thorough examination of the cumulative and interrelated effects of both projects in the RM-1 Geographic Unit on the Forest. Because scoping efforts had been conducted for each of the projects individually (Fina in 1983-84 and Chevron in 1986), it was decided that public scoping meetings were not necessary for the combined Environmental Impact Statement (EIS) effort. Instead, the Study Team mailed summary packages to the individuals and organizations on their mailing list. The summary packages included the scoping comments and the issues identified during initial scoping periods for both projects. The team also included a summary of the issues identified in the appeals on the original Hall Creek decision. Those receiving the packages (approximately 350) were asked to review the issues that had been identified and submit any additional issues to the Study Team. The Forest received seven written letters and one telephone comment during this third round of scoping.

In April 1988, a second letter was sent to the mailing list (350) identifying the alternatives to be analyzed and a colored map of the alternative locations.

A social assessment was prepared during 1987 as part of the background materials for the EIS. The information in this report provided insight into the social values, perceptions, and attitudes of those residents most likely to be influenced by oil and gas exploration and/or development. The need for a social/economic issue was identified by the Study Team and included in the analysis. The social conditions and analysis were based on the comments received during the scoping process, comments on the Forest Plan (1985), newspaper articles, and the results from the unstructured interviews conducted in the preparation of the Social Assessment background document. During 1988 and 1989, the Study Team continued work on the preparation of the draft EIS using all of this information.

Feelings and perceptions about the social implications of exploratory drilling in the RM-1 Geographic Unit vary. Some feel oil and gas development would bolster the economic condition on the reservation and the local communities. They believe the National Forest should be managed for multiple use purposes, oil and gas being an acceptable use. Others support protection of the area. The amount of protection ranges from those who support a recreation-based management concept to those who advocate Wilderness classification. Blackfeet traditionalists feel that the area deserves protection for the continued practice of the traditional Blackfeet religion.

The draft EIS was released for public comment in early October, 1989.

## **GALT LAND EXCHANGE:**

An ongoing process to evaluate and finalize a land exchange proposal in the Crazy Mountain range has been the focus of public concern for those having an interest in both the Lewis and Clark and the Gallatin National Forests. Many people were involved in public scoping meetings during 1986 to assist the Forest in identifying issues. Access to National Forest lands was identified as the key issue during the scoping process. Also expressed was the concern that National Forest lands involved in the exchange may be more valuable for wildlife than those lands to be acquired.

In response to the access issue, the exchange proponent has agreed to include five trail easements and one road easement in the exchange package. Perfection of these easements would ensure public access to the National Forest. The total acreage of the original exchange proposal was reduced. Letters were sent in late January 1988 to those who had been involved in the scoping process explaining the modifications to the original land exchange proposal.

At the end of FY 1989, the landowner made an offer to sell the land in the Crazy Mountains to the Forest Service. Because of this offer, the decision on the land exchange proposal was deferred until an investigation is completed on purchasing the property.

#### **WILD AND SCENIC RIVERS:**

To fulfill the requirements specified in the 1968 Wild and Scenic River Act (WSR Act), an analysis was initiated on the Forest to determine the eligibility of every river on or crossing National Forest and to assign a potential classification (wild, scenic, recreational) to those river segments determined eligible.

A March 13, 1989, a Decision Notice and Finding of No Significant Impact documented nine rivers eligible for further study under the 1968 Wild and Scenic Rivers Act. Eligibility was based on each river being free-flowing and containing at least one "outstandingly remarkable" resource value (i.e. scenic, recreation, geologic, fisheries, wildlife, cultural, natural). Eligible rivers include North Badger Creek, North Fork Sun River, South Fork Sun River, North Fork Birch Creek, Green Fork of Straight Creek and segments on National Forest lands along the Smith River, Tenderfoot Creek, Dearborn River, and the Middle Fork Judith River. These nine rivers were assigned a potential classification of "wild, scenic, and/or recreational" based on the condition of the river and adjacent lands. The March 13, 1989 Decision Notice also incorporated Forest Plan Amendment 2 which provided management direction to protect and enhance each eligible river consistent with their potential classification. This direction remains in effect until the river suitability study is completed and/or a future decision is made on their designation into the National Wild and Scenic River System.

Copies of the decision were mailed to over 380 individuals/groups. The decision was appealed by: (1) Pikuni Traditionalists Association, (2) Badger Chapter, Glacier-Two Medicine Alliance, and (3) John R. Swanson. The decision was upheld by the Regional Forester.

The Study Team is presently reviewing resource information collected on Forest Rivers during the past field season. This review could result in the Study Team recommending additional rivers as eligible.

#### **MARIAS PASS:**

On April 25, 1988 a decision was made on the Marias Pass Master Site Plan. The main issues addressed by the Study Team were: public safety, effects to a National Register eligible historical site, interpretation of historical features, protection of resource values, and attractions to the area. Copies of the decision were mailed to approximately 70 individuals and groups. No appeals were received on the decision and the project was completed during the summer of 1989. A re-dedication ceremony will be held in 1991 as part of the National Forest Reserves Centennial Celebration.

#### **LEWIS AND CLARK NATIONAL HISTORIC-TRAIL INTERPRETIVE CENTER:**

The Lewis and Clark National Historic Trail Interpretive Center was established by Public Law 100-552, October 28, 1988. Congress specifically determined that "the historic significance of the travels of Lewis and Clark on the High Plains and their portage around the Great Falls of the Missouri requires...recognition and interpretation."

A Community Planning Meeting setting the vision for the Center was held March 4, 1989 with thirty five participants. Those attending represented the Forest Service, Montana Department of Fish, Wildlife and Parks, Bureau of Land Management, Lewis and Clark Trail Heritage Foundation, Cascade County Historical Society, Montana Power Company and members of the community.

In May, a Citizen's Steering Committee was formed to work with Forest Service Planning Team, and in July, a site was selected for the Interpretive Center.

The Citizen's Steering Committee and Forest Service Planning Team have been working closely with the Montana Department of Fish, Wildlife and Parks and the Giant Springs Heritage Park Commission to coordinate plans with the master site plan being developed for the State Park.

Plans for the Interpretive Center include an indoor theater, 10,000 square foot exhibit area, outdoor amphitheater, interpretive trail system, and outdoor living history demonstration area where volunteers and staff can dress in period clothing and demonstrate activities of the Expedition.

Programs at the Center will include public seminars, classroom and outdoor activities for school children, college-accredited coursework for students and teachers, and a research library for history scholars or researchers.

The Lewis and Clark Trail Heritage Foundation Inc. has decided to collocate their headquarters with the Interpretive Center. Their archival library collection will be housed at the center.

Continued planning efforts include the following:

1. Development of the interpretive storyline.
2. Preparation of a design contract package.
3. Completion of the National Environmental Policy Act.
4. Award of a design contract.
5. Design of road and utilities access.

#### **NATURAL PRESCRIBED FIRE PROGRAM IN THE BOB MARSHALL WILDERNESS COMPLEX:**

Many informational activities were planned for the summer of FY 1989 because of the severity of the fire season in 1988 and the resulting effects of the Canyon Creek and Gates Park Fires. In June, three field trips with cooperating agencies, permittees, and an interested public group were taken into the Canyon Creek Fire area to view the effects of the fire and the success of grass seeding. Also, in June a meeting was held in Augusta, Montana with the Soil Conservation Service to establish a joint monitoring plan of the fire areas.

In August, two Great Falls Montana television stations (KTGF and KFBB) produced follow-up stories on the Canyon Creek and Gates Park Fires. The stories highlighted environmental effects and rehabilitation efforts after the fires.

In September, an extended pack trip for university researchers and Region One Forest Service personnel was taken to the Canyon Creek Fire area.

At the end of FY 1989, a regional team was established to review the fire management action plans for the four National Forests which are part of the Bob Marshall Wilderness Complex.

#### **TIMBER SALE PROGRAM (TIMBER SALE EA APPEALS AND TSPIRS):**

The Moose Park Timber Sale within the Moose Creek project area was offered for sale in FY 1989. The American Wilderness Alliance appealed the Moose Creek Timber Sales Environmental Assessment under 36 CFR 217.9. In this appeal the organization requested a stay of the Moose Park Timber Sale and it was granted. Therefore, the advertisement was withdrawn pending administrative review. The Regional Forester remanded the decision for additional disclosure of new information. Because of the possible significant environmental effects, a decision was made to prepare and Environmental Impact Statement.

The Forest is also preparing Environmental Impact Statements for timber sales in Mill-Lion and Spring Creek on the Musselshell Ranger District, and South Fork Complex on the Judith Ranger District. These Environmental Impact Statements should be completed in FY 1990.

#### **OTHER ISSUES:**

Management of the Badger-Two Medicine area remains sensitive with the Blackfeet people and Wilderness advocates. Protection of the lands continues to be a key issue with traditional Blackfeet practitioners.

Reissuance of oil and gas leases on the Forest will be an upcoming issue for managers within the next years. Many of the previously issued leases expire beginning in 1991. Currently, no requests for reissuance of expired leases have been received by the Forest. Requests are anticipated within the next several years. A decision on the future status of leasing will be made after further NEPA analysis.

The Forest is in the center of a regional (eastern Montana) issue which revolves around increased public awareness and demand for access to public lands. In 1987, a Goal Statement was developed by the staff of the Lewis and Clark National Forest to promote public access to public lands. "It is the goal of the Lewis and Clark National Forest to provide equal access opportunities to all National Forest System lands except where the impact of public access to the unique resources of the area would be unacceptable. Where the cost of providing public access is greater than the anticipated public benefit, the lands will be scheduled for disposal by exchange or other land ownership adjustment process. The number and location of access points and type of access facility will be determined through analysis of the expressed public demand, environmental impacts, and cost of access for each individual situation." In the summer of 1989, an analysis of Area Access Needs for the Highwoods Mountains was initiated. Individual contact was made with all landowners adjacent to National Forest lands and public meetings were held to determine the type and location of access needed, as documented in the Forest Plan. This analysis is continuing into FY 1990.

**1-3 Evaluate lands identified as not meeting physical or biological characteristics used in initial allocation.**

**Frequency of Measurement:** 100 percent sample annually.

**Reporting Period:** Continuous.

**Variability Which Would Initiate Further Evaluation:** All changes will be evaluated annually.

The Forest is updating its timber stand inventory data base. As of the end of FY 1989, 529,284 acres of the Forest total of 1,843,397, or 29 percent has been updated.

Following is a summary by Ranger Districts:

Ranger District	Total National Forest	Inventoried
Rocky Mountain	776,259 acres	60,202 acres
Judith	362,841	182,559
Musselshell	267,415	99,260
Kings Hill	436,882	187,263
Total	1,843,397 acres	529,284 acres

**I-4 Validation of employment and income projections.**

**Frequency of Measurement:** 5-years (FY 1991).

**Reporting Period:** 5-years (FY 1991).

**Variability Which Would Initiate Further Evaluation:** More than plus or minus 20 percent of projected changes.

This is a 5-year frequency measurement and will be validated in FY 1991.

The following tables compare the outputs, activities, and budgets with those projected in the Forest Plan.

TABLE I  
COMPARISON OF OUTPUTS AND ACTIVITIES WITH THOSE PROJECTED IN THE FOREST PLAN FOR THE  
PLANNING PERIOD (1987-1996)

Projected Outputs and Activities by Time Period (Average Annual Units)

Output or Activity	Unit of Measure	First Decade	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Developed Use	M RVD	169	145	175	205							
Dispersed Use												
Wilderness	M RVD	86	54	42	60							
Non-wilderness	M RVD	614	518	503	450							
Wildlife Habitat Imp	Acres	600	300	1400	1392							
Fish Habitat Imp	Acres	5	2	0	10							
T&E Habitat Imp	Acres	100	0	0	0							
Wildlife Habitat Structures	Structures	10	2	0	3							
Fish Habitat Structures	Structures	25	16	19	11							
Permitted Graze Use	M AUM	71.1	71.0	72.3	72.4							
Range Improvement												
Nonstructural	Acres	1329	1999	2433	1607							
Structural	Structures	40	20	18	26							
Range Resource Plans (Allotment Mgt Plans)	Plans	10	5	4	4							
Noxious Weed Control	Acres	300	772	-	-							
Noxious Weed Control	Acres	600	-	616	636							
Soil Inventory	Acres	2000	0	0	0							
Minerals Mgmt	Cases	90	160	134	-							
Minerals Mgmt	Cases	160	-	-	250							
Total Volume Offered	MM BF	14	11.7	16.0	9.7							
Silvicultural Exams	M Acres	15.5	30.6	33.9	-							
Silvicultural Exams	M Acres	28.0	-	-	25.9							
Reforest-Approp	Acres	54	0	225	67							
Reforest-KV	Acres	270	1064	490	0							
Timber Stand Imp-Appropriation	Acres	200	688	568	502							
Timber Stand Imp-KV	Acres	0	125	12	0							
Landline Location	Miles	26	14	21	25							
Fuels Mgmt-BD	Acres	1470	1813	1201	1053							
Fuels Mgmt-FFP	Acres	700	665	863	1020							
Road Construction	Miles	9.0	3.7	2.9	0							
Road Reconstruct	Miles	24.0	29.7	20.3	17.9							
Total	Miles	33.0	33.4	23.2	17.9							
Trail Construction/Reconstruction	Miles	14.0	8.5	13.3	12.8							

**TABLE II**  
**COMPARISON OF THE ACTUAL BUDGET RECEIVED IN FY 1989 WITH THE FOREST PLAN**  
**PROJECTED ANNUAL BUDGET:**

Funding Item	Budget Activity	Forest Plan Projected Budget FY89 Dollars Thousand \$	1989 Actual Budget FY89 Dollars Thousand \$
00	General Administration	\$1077	\$1030
01	Fire	\$335	\$251
02	Fuels	\$33	\$29
03	Sales Prep/Admin	\$274	\$333
04	Timber Planning	\$165	\$173
05	Silvicultural Exams	\$216	\$223
06,07	Range	\$450	\$305
08	Minerals	\$495	\$212
09	Recreation	\$572	\$348
10	Wildlife and Fish	\$518	\$199
11	Soil, Air, Water	\$178	\$99
12	Facility Maintenance	\$125	\$34
13	Special Uses	\$56	\$40
14	Geometronics	\$12	\$0
15	Land Exchange	\$53	\$24
16	Landline Location	\$101	\$101
17	Road Maintenance	\$426	\$315
18	Trail Maintenance	\$312	\$156
19	Co-op Law Enforcement	\$46	\$45
20	Reforestation - Appropriated	\$64	\$31
21	TSI - Appropriated	\$31	\$70
23	Tree Improvement	\$8	\$12
26,28	KV (Trust Fund)	\$112	\$90
29	CWFS - Other (Trust Fund)	\$26	\$60
30	Timber Salv. Sales (Perm.Fund)	\$35	\$29
31	Brush Disposal (Perm. Fund)	\$26	\$39
32	Range Improvement	\$55	\$35
33	Recreation Construction	\$51	\$94
34	Facility Construction - FA&O	\$0	\$7
35	Engineering Construction Support	\$503	\$388
36	Const. - Capital Investment Roads	\$579	\$531
37	Trail Construction/Reconstruction	\$147	\$131
42	Land Status	\$43	\$0
43	Land Acquisition	\$173	\$0
	<b>Total Budget</b>	<b>\$7,297</b>	<b>\$5,434</b>
24,38	Timber Purchaser Credits	\$238	\$47
	<b>Total Cost</b>	<b>\$7,535</b>	<b>\$5,481</b>

#### IV. PLANNED ACTIONS

These planned action items have been identified in this report. They are in addition to the routine actions listed in Chapter V Implementation section of the Forest Plan.

##### Planned Action

- A. There is a need to increase awareness and commitment to monitoring range condition and trend (D-2).
- B. There is a need to place greater emphasis on range management planning (Allotment Management Plans) (D-4).
- C. There is a need to continue to validate costs and values used in the Forest Plan (I-1).

## V. RESEARCH NEEDS

The following additional research needs have been identified:

No additional research needs have been identified.

## VI. AMENDMENTS

The following amendments have been made to the Lewis and Clark National Forest Plan:

- A. Bob Marshall, Great Bear and Scapegoat Wildernesses Recreation Management Direction (Replaces Appendix U, Wilderness Recreation Opportunity Class Descriptions and Guidelines, April 1987) (Amendment Number 1).
- B. Wild and Scenic Rivers Study, March 13, 1989. (Amendment Number 2).
- C. Amendment Number 3, April 17, 1989.

VII. APPENDICES

APPENDIX A - Lewis and Clark National Forest Wilderness Monitoring Report (B-2)

VIII. LIST OF PREPARERS

The following individuals contributed to the development of the Monitoring and Evaluation Report for the Lewis and Clark National Forest for Fiscal Year 1989.

Name	Functional Resource Area
Bonnie Dearing	Public Information Officer
William Duryee	Staff Officer Engineer/Lands
James Eakland	Forester - Planning
Sam Gilbert	Zone Timber (Silviculturist)
Donald Godtel	Wildlife Biologist
Valdon Hancock	Hydrologist
Cynthia Manning	Archaeologist
Wayne Phillips	Ecologist
Keith Sandifer	Supervisory Geologist
Donald Sasse	Wildlife Biologist
Dick Smith	Staff Officer Land Management Planning/Fire
Len Walch	Zone Fisheries Biologist
Ronald Yates	Landscape Architect

In addition, the report was reviewed by the following individuals:

John Gorman	Forest Supervisor
Dick Call	Zone Staff Officer (Timber)
Paul Threlkeld	Staff Officer Administration
Robert Casey	District Ranger, Rocky Mountain Ranger District
Jerry Dombrowske	District Ranger, Judith Ranger District
William Fortune	District Ranger, Musselshell Ranger District
Victor Standa	District Ranger, Kings Hill Ranger District

IX. APPROVAL

I have reviewed the annual Forest Plan Monitoring and Evaluation Report for Fiscal Year 1989 for the Lewis and Clark National Forest that was prepared by the Forest Interdisciplinary Team. I am satisfied that the Monitoring and Evaluation effort meets the intent of the Forest Plan (Chapter V), Forest Service Handbook 1909.12, and 36 CFR 219.

This report is approved:



JOHN D. GORMAN  
Forest Supervisor

Date: June 25, 1990

## APPENDIX A

### LEWIS & CLARK NATIONAL FOREST WILDERNESS MONITORING REPORT (B-2)

A summary of the monitoring that was accomplished is as follows:

#### *TRAIL ENCOUNTERS*

Frequency:

Monitoring of trail and campsite density was accomplished at an intermediate level for Opportunity Class (OC) 3 and 4 except within the Gates Creek Fire area where many of the trails were impassable during much of July and August.

An intermediate level is twice monthly for July and August and once a month in September, October, and November. It should be noted that in much of the Rocky Mountain Ranger District, OC 3 is within the Sun River Game Preserve which receives light to no use in October and November.

Monitoring within the Canyon Creek and Gates Creek Fire Areas reflected outfitter use at 75% of the level before the fires, while private use of the burn areas was almost nonexistent with the exception of Headquarters Pass Trail #165 (OC 3), which exceeded trail encounter standards four of the six times it was monitored.

Encounter Standards:

- OC 1 - 80% probability of encountering no other parties.
- OC 2 - 80% probability of encountering no more than 1 other party.
- OC 3 - 80% probability of encountering no more than 3 other parties.
- OC 4 - 80% probability of encountering no more than 5 other parties.

Standards Exceeded:

OC 4:

- On West Fork Sun River Trail #203, five of the eight times it was monitored.
- On South Fork Sun River Trail #202, three of the eight times it was monitored.
- On North Fork Sun River Trail #201, four of the nine times it was monitored.
- On Moose Furman Trail #261, three of the five times it was monitored.

OC 3:

- Trails were generally within standard except as noted previously:
- Headquarters Creek Trail #165.
  - Moose Creek Trail #131 also exceeded standard in the OC 3, three of the six times it was monitored. (A definite shift in travel use from Rock Creek Trail to Moose Creek Trail was noted).

OC 2 and 1:

- Trails that were monitored (66% of which were monitored) were within standard.

#### *CAMPSITE ENCOUNTERS AND DENSITY*

Frequency: Same as stated under trail encounters.

Encounter Standards:

- OC 1 - 80% probability of encountering no other camps.
- OC 2 - 80% probability of encountering no other camps.

- OC 3 - 80% probability of encountering no more than 1 other camp.
- OC 4 - 80% probability of encountering no more than 3 other camps.

Standards Exceeded:

OC 4:

- The only area that exceeded the campsite density standard was Circle Creek, section 3, T22N, R10W, PMM, where there were five occupied camps October 22nd through October 25th.
- South Fork and West Fork Sun River area were found to each reach the standard of three camps within sight or sound on three occasions each.
- The Glenn Creek area on North Fork of Sun River also had three camps within sight and sound on two occasions.

OC 3, 2 and 1:

None were found to exceed their respective standards.

The monitoring effort did reveal that both trail and campsite encounters are within standard overall for all opportunity classes except for isolated instances previously noted.

*SEVERELY IMPACTED SITES*

Frequency:

Severely impacted sites should be reinventoried annually. 286 campsites have been inventoried to date. Of these, less than 10% were classified as severely impacted.

Problem Areas:

- West Fork of Sun River from Reef Creek to Indian Point.
- Glenn Creek from 1/2 mile upstream of North Fork Sun River to 3/4 mile down stream.
- One campsite in the Pretty Prairie area.

Camp closures around all lakes and under the Chinese Wall are in effect and these sites are showing slow improvement. Rest rotation and closure to horses in some other camp sites have dramatically improved conditions at these sites.

Improved Sites:

- The junction of Headquarters Creek and Gates Creek and North Fork of Sun River in the Bob Marshall Wilderness.
- Pass Creek and Halfmoon Park in the Scapegoat Wilderness.

*BARRON CORE*

Barren Core has not been a problem except in high alpine cirque.

Problem Areas:

- Moose Creek Closure under the Chinese Wall.
- Pretty Prairie area where very early season camping (May and early June) has occurred in the past.

Isolated areas particularly along the West Fork of Sun River have been inventoried. These average about 100 to 200 square feet in OC 4.

*NUMBER OF HUMAN IMPACTED SITES PER 640 ACRES*

Encounter Standards:

- OC 1 - 1 human impacted site per 640 acres.
- OC 2 - 2 human impacted sites per 640 acres.
- OC 3 - 3 human impacted sites per 640 acres.
- OC 4 - 6 human impacted sites per 640 acres.

OC 4:

Only the West Fork of Sun River and Glenn Creek area on the North Fork Sun River approach this standard.

OC 3, 2, and 1:

Isolated instances occur in all OC's, particularly in areas receiving additional use since the 1988 fires. Upper West Fork Sun and Moose Creek in OC 3, Ahorn, Pearl Basin, and Halfmoon Park in OC 2, and Grizzly Basin in OC 1 are areas that will require close monitoring in the future.

*RANGE*

Encounter Standards:

Degree of forage utilization:

- OC 1 - No more than 20% of key species forage utilized.
- OC 2 - No more than 20% of key species forage utilized.
- OC 3 - No more than 40% of key species forage utilized, except on big game winter range and grizzly bear habitat.
- OC 4 - Same as OC 3.

Overall the range condition is good. Normal precipitation was received in 1989.

OC 4:

- Areas that are approaching the standard are:
- West Fork of Sun River from Reef Creek to Burnt Creek.
  - Bear Creek on South Fork Sun River.
  - Glenn Creek on North Fork of Sun.
  - Heavy fall use area on Circle Creek and Bridge Creek.

OC 3:

In the past Red Shale has been a problem area, but with the intensive burn in this area, the grazing patterns may change. The area received no use in 1989 due to trail condition.

OC 1 and 2:

There have also been isolated instances in the Scapegoat Wilderness of range deterioration, but these areas burned intensively and have either not recovered from the fire or have not been grazed this past season. Most notable of these are:

- Pass Creek.
- Cave Creek.
- Red Slide Mountain.

The outfitter at Halfmoon did not graze the area this season, because the forage had not recovered from the intense burn in that area. The high elevation of the grazing area (generally lies above 7,000 feet) undoubtedly attributed to the slow recovery of the forage. Forage was available for light grazing, however trailing of stock over the light sod of the area and fragile soils may have attributed to excessive erosion so the grazing was shifted to lower elevation meadows.