



MONITORING AND EVALUATION REPORT

FY 2003

**Bighorn National Forest
Region 2**



United States
Department of Agriculture

Forest Service
Sheridan, Wyoming



CERTIFICATION

I have reviewed the Annual Monitoring and Evaluation Report for the Bighorn National Forest for fiscal year 2003. I believe that the monitoring and evaluation requirements of the Forest Plan (Chapter IV) have been met and that decisions made in the Forest Plan are still valid; however, we are just over 1 year from having a Revised Plan. I have noted and considered the recommendations and will implement those that I decide are appropriate after further analysis and required public notification and involvement.

I am especially proud of the work accomplishments reported here. Despite budget constraints and shifting priorities, we, along with our cooperators and volunteers, accomplished a great deal of project work on the ground, where it ultimately counts.

/s/ William T. Bass

William T. Bass
Forest Supervisor

09/13/2004

Date

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INTRODUCTION

The Bighorn National Forest Land and Resource Management Plan (Forest Plan) was approved on October 4, 1985. The plan was developed over a five-year period, based on, among other things, a comprehensive public notification and comment process. An Environmental Impact Statement and Record of Decision accompanied the Forest Plan.

The Forest Plan established direction and process so all future decisions would include an interdisciplinary approach to achieve integrated resource management. The Forest Plan provides direction to coordinate multiple uses on the Bighorn National Forest on a sustained basis. The plan also fulfills legislative requirements and addresses local, regional, and national issues. The Forest Plan, Chapter IV requires monitoring and evaluation of management activities to determine the following:

- ◆ How well Forest Plan objectives have been met.
- ◆ Consistency of activities with standards and guidelines contained in the Forest Plan.
- ◆ The need for amendment or revision.

This report is the annual Monitoring and Evaluation Report. It displays the results of monitoring and provides the Forest Supervisor and the public with information on the progress being made toward achieving the goals, objectives, and management requirements in the Forest Plan. It also indicates how well we are fulfilling public demand for goods and services while protecting the Forest resources. An annual Monitoring and Evaluation Report is to be prepared for each existing Forest Plan, including those plans under revision. Funds are provided for the preparation of the report based on information and data collected under agency direction. A target of one report has been assigned to each Forest.

Background

Monitoring is the quality control aspect of forest planning; it requires data collection and observations of activities to periodically evaluate the planning process and the Forest Plan. Evaluation is the analysis and interpretation of monitoring results. It addresses the goals, objectives, long-term relationships, management direction, and significant management activities occurring. There are four aspects to monitoring and evaluation:

- ◆ **Implementation Monitoring** – Forest personnel conduct monitoring as part of their routine assignments and management responsibilities. Their results are documented in project files. Monitoring is performed to determine if management activities are designed and carried out in compliance with forest plan direction and management requirements.
- ◆ **Effectiveness Monitoring** – this type of monitoring determines if management activities are effective in driving the Forest toward the desired future condition described for the various management areas.

- ◆ **Validation Monitoring** – this type of monitoring determines whether the initial data, assumptions, and coefficients used in development of the Forest Plan were correct or if there is a better way to meet goals and objectives and achieve the desired future condition.
- ◆ **Evaluation and Conclusions** – the purpose of evaluation is to interpret monitoring results and reach some conclusions about what the monitoring results really mean with regard to Forest Plan implementation. The interdisciplinary team (I.D Team) may make recommendations and identify research needs as a result of the evaluation process.

Five-Year Monitoring Requirements

Every five years monitoring is to be evaluated to determine if the Forest Plan needs to be revised. FY 2003 is the 18th year of implementation for the Bighorn National Forest Plan. Specific items requiring a revision include:

- ◆ Changes in public demand.
- ◆ Changes in condition of the land or resource used to conduct the analysis, catastrophic events, or monitoring results.
- ◆ National Forest Management Act requirement to update every 15 years.

Planning Activities

Forest Plan Revision

According to the National Forest Land Management Act, the Forest Plan must be revised every 15 years. The first attempt to begin this revision process occurred in the fall of 1997. However, the Interior and Related Agencies Fiscal Year 1998 Appropriations Bill (as amended according to Commerce Bill H.R. 2267) contained language that limited spending for forest plan revision activities. Only those Forests with a formally published “Notice of Intent” (NOI) to prepare an Environmental Impact Statement (EIS) were authorized to proceed with revision. The Bighorn had not published an NOI and consequently, was not funded to revise its plan.

In fiscal year 1999, eleven Forests approaching the 15-year anniversary for approval of their plans were once again funded for revision. The Bighorn was one of these forests. We began to refine our data needs and make necessary arrangements for supporting studies in earnest.

The Notice of Intent (NOI) to revise the Land and Resource Management Plan for the Bighorn National Forest was published in the Federal Register on November 10, 1999. At that time, the Forest Service invited comments on the information contained in the NOI and asked that they be forwarded to us for inclusion in the revision process. The following five major revision topics were proposed in the NOI:

Biological diversity

Special areas.

Timber suitability and management of forested lands

Travel management and dispersed recreation.

Roadless area allocation and management

In early February 2000, funding for revision was significantly reduced due to other planning issues at the national level. These included revising the current Forest Service planning regulations, drafting a national policy on managing our remaining roadless areas, and a proposed new Forest Service roads policy. The result was another delay in the revision process.

In October 2000, funding allowed us to once again undertake forest plan revision. An initial round of public meetings occurred in six towns surrounding the Forest, and the public involvement process is ongoing. To the greatest extent possible, all work completed as of this date, including prior studies and public comments, will be incorporated into the process and final product. The Draft Revised Plan and Draft Environmental Impact Statement were published and available for public review and comment in July 2004, and revision is scheduled for completion in 2005.

Forest Plan Amendments

The Forest Plan has been amended 15 times since it was approved in 1985. The amendments are summarized below and the changes in management area allocations resulting from the amendments are displayed at the end of these summaries in a table.

Forest Plan Amendment One updated the Ten-Year Timber Sale Summary (Appendix A) – updated through 1990, Arterial and Collector Road Construction and Reconstruction Summary (Appendix B)--updated through 1993, Trail Construction and Reconstruction Summary (Appendix C)--updated through 1993 and Developed Recreation Site Construction/Reconstruction Summary (Appendix H)--updated through 1993.

Forest Plan Amendment Two updated the implementation schedules, including the Ten Year Timber Sale Summary in Appendix A, Trail Construction and Reconstruction Summary in Appendix C, and Developed Recreation Site Construction and Reconstruction Summary in Appendix H. It was necessary to update these schedules annually to reflect changes in planned activities due to such factors as differences between program budgets and actual appropriations, economic considerations, site-specific analysis, and other natural and physical factors.

Forest Plan Amendment Three updated the Ten Year Timber Sale Summary in Appendix A. Schedules are updated as needed to reflect changes in planned activities due to differences between budgets, actual appropriations, economic considerations, site-specific analysis, and other natural and physical factors. The changes in the schedules did not represent a change in management direction.

Forest Plan Amendment Four changed and improved some of the monitoring requirements for wildlife, range, soils, water, riparian, and fish habitat. The Forest Interdisciplinary Team had discovered that some of the procedures and standards did not provide the best means for monitoring.

Forest Plan Amendment Five was issued to change the projected expenditures and returns shown in Forest Plan Table III-1. This change updated the costs for plan implementation.

Forest Plan Amendment Six added the Forest's Recreation Strategy as Appendix J and the designation of three scenic byways as Appendix K. These documents did not change the overall Forest Plan direction, but did clarify the goals and objectives of the recreation program.

Forest Plan Amendment Seven replaced the seven-year regeneration standard with a five-year regeneration standard, which applied to final harvest of lodgepole pine. The amendment added additional Standards and Guidelines to be used in making a determination that regeneration could be assured within five years following final harvest. The amendment also made corrections to the lands designated as suited for timber harvest, reducing the amount of land suited for timber harvest by about 4,000 acres to 262,062 acres.

Forest Plan Amendment Eight changed the visual quality objectives for the Twin Lakes Reservoir special-use permit area, Sections 34 and 35, Township 54 North, Range 87 West, Sixth Principle Meridian. The visual quality objectives in management areas 4B and 9A were changed from Retention and Partial Retention to Maximum Modification. This change allowed for the expansion of the Twin Lakes Reservoir to proceed and be consistent with Forest Plan direction.

Forest Plan Amendment Nine changed management prescriptions on 83 acres of lands because of the Tie Hack Dam and Reservoir, which is located on the South Fork of Clear Creek. This amendment changes 47 acres of management prescription 4B (wildlife management) and 36 acres of management prescription 7E (timber management) to 83 acres of management prescription 9E (water impoundment).

Forest Plan Amendment Ten changed 22 acres of 6B (livestock grazing) to 1A (Developed Recreation Management – Tie Hack Campground). In addition, the timber suitability on these 22 acres of Management Area 1A changed from suited forestland - timber emphasis (511 timber component) to unsuited forestland - land not appropriate for timber production (825 timber component).

Forest Plan Amendment Eleven changed the management prescriptions on 101 acres of National Forest lands located at the Twin Lakes Dam and Reservoir site located on Coney Creek, Tongue Ranger District. This amendment changes 86 acres of management prescription 4B (wildlife management) and 15 acres of management prescription 9A (riparian management) to 101 acres of management prescription 9E (water impoundment).

Forest Plan Amendment Twelve changed the Standards and Guidelines in the Area of Consultation described in the Medicine Mountain Historic Preservation Plan. The current Forest Plan land allocations within the Area of Consultation will remain the same.

Forest Plan Amendment Thirteen changed 40 acres from 7E and 2B designation to 1A to accommodate the Tie Hack Campground.

Forest Plan Amendment Fourteen changed the Cloud Peak Wilderness Area from four management areas to two, and revised or added 10 Standards and Guidelines for management.

Forest Plan Amendment Fifteen revised the list of Management Indicator Species (MIS) for the Forest from twenty-four to six species. The amendment refined the species being monitored because the Forest could not monitor population trends of 24 species, nor were many of the species reflective of management issues tied to specific habitats. The following six species were designated as MIS: elk, red squirrel, red-breasted nuthatch, white-crowned sparrow, lark sparrow, and three-toed woodpecker. The amendment also included monitoring requirements for MIS and certain TES species.

These fifteen amendments redistributed the management area allocations for 206 acres, which is .019 percent of the total Bighorn Forest – see Table 1 for current allocations

Table 1. Current management area allocations on the Bighorn National Forest compared with those in the 1985 forest plan.

Management area	Emphasis	Acres Allocated in 1985 Forest Plan	Current Allocated Acres
1-A*	Existing & proposed developed recreation facilities	913	935
1-B	Existing & potential winter sports sites	559	559
2-A	Semi-Primitive Motorized recreation opportunities	42,378	42,378
2-B	Rural & Routed Natural recreation opportunities	15,220	15,220
3-A	Semi-Primitive Nonmotorized recreation opportunities	44,660	44,660
3-B	Primitive recreation in unroaded areas	45,980	45,980
4-B*	Wildlife habitat management for one or more management indicator species	206,237	206,104
4-D	Aspen stand management	11,171	11,171
5-A	Wildlife winter range in non-forested areas	15,500	15,500
5-B	Wildlife winter range in forested areas	10,153	10,153
6-A	Livestock grazing, improve forage condition	26,494	26,494
6-B	Livestock grazing, maintain forage condition	242,541	242,541
7-E*	Wood fiber production	202,500	202,442
1.11	Pristine wilderness	130,803	130,803
1.13	Wilderness, semi-primitive	61,094	61,094
9-A*	Riparian and aquatic ecosystem management	11,744	11,729
9-B	Increase water yield	4,080	4,080
9-E*	Needed water impoundment sites	0	184
10-A	Research natural areas	1,320	1,320
10-C	Scenic, geologic, historic, and other Special Interest Areas	165	165
10-D	Wild and scenic rivers corridors	30,559	30,559
Total Forest Acres		1,107,670	1,107,670

* Note: Management Area 1A (Recreation Facilities) increased by 22 acres.
Management Area 4B (Wildlife), decreased by 133 acres.
Management Area 7E (Wood Fiber Production) decreased by 58 acres.
Management Area 9A (Riparian) decreased by 15 acres.
Management Area 9E (Water Impoundment) increased by 184 acres.

Forest Plan Projected vs. Actual Outputs

The following table compares projected forest plan average annual outputs, costs, and returns to actual fiscal year (FY) 2003 accomplishments. A direct comparison of projected outputs is not always appropriate due to variables such as allocated budgets.

Table 2. Projected forest plan average annual outputs, costs and returns compared to actual FY 2003 accomplishments.

Activity	Unit of Measure	2001-2010 Avg. Annual Projected Outputs	FY 2003 Outputs
Soils			
Soil and Water Resource Improvements (i.e., improved watershed condition)	Acres	38.5	40
Annual Soil Survey	Acres	Not estimated	Completed
Soil Loss (incremental increase due to timber harvest and road construction)	M tons	9.3	~
Water			
Water Yield	MAF	699	699
Water Meeting Water Quality Goals	MAF	Not estimated	~
Water Not Meeting Water Quality Goals	MAF	Not estimated	~
Minerals			
Leasing Availability Recommendations			0
No Lease	M Acres	211.98	0
Lease	M Acres	723.84	0
Lease Without Surface	M Acres	171.85	0
Minerals Operating Plans	Total Number	5	1
Fire			
Fire Management -Most Efficient Level	Million \$s	1.16	1.762
Fuels Breaks and Natural Fuels (includes prescribed burns)	Acres	300	2,729
Wildlife and Fish			
Wildlife Habitat Improvement	Acres	2,560	1,500
Big Game Winter Range Carrying Capacity			
Elk	Number	527	527
Deer	Number	1,053	1,053
Riparian Area Improvement	Acres Improved Annually		200
Aspen Treatment	Acres	527	21
Changes in Habitat Capability of Indicator Species			~
Early Successional Stage	% change (mean of 8 species)	Not estimated	~

Activity	Unit of Measure	2001-2010 Avg. Annual Projected Outputs	FY 2003 Outputs
Mid Successional State	% change (mean of 8 species)	Not estimated	~
Late Successional Stage	% change (mean of 6 species)	Not estimated	~
Fisheries Improvement Structures	Structures Constructed Annually	60	1
Wildlife Structures	Structures Constructed Annually	15	5
Threatened and/or Endangered Species Habitat Management	Number of Animals	0	2
Range			
Permitted Livestock Grazing	MAUMs	140	122.4
Areas of Grazing, Recreation & Wildlife Conflicts Where Conflict are Reduced	M Acres (Cumulative totals rather than annual outputs)	22	58
Timber			
Total Programmed Sale Volume Offered	Million BF	16.5	2.96
Total Programmed Sale Volume Offered	Million CF	4.3	0.66
Sawtimber Volume (7'+)	Million BF	14.5	1.49
Sawtimber Volume (7"')	Million CF	3.8	0.30
Roundwood Volume Offered (live 5" - 6.5")	Million BF	0.5	0.11
Roundwood Volume Offered (live 5" - 6.5")	Million CF	0.08	0.03
Mortality Volume	Million BF	1.4	1.36
Mortality Volume	Million CF	0.37	0.33
Timber Stand Improvement	Acres	400	460.0
Reforestation (planting and seeding)	Acres	360	252.0
Clearcutting	Acres	1,194	38
Shelterwood Cutting	Acres	625	180.0
Uneven-aged Selection Cutting	Acres	100	0.0
Catastrophic Salvage	Acres	0	0.0
Insects and Disease			
Insect and Disease Survey	M Acres	800	1
Developed Recreation			
Developed Recreation Capacity (except downhill skiing)	MRVDs	1,137	1,109
Developed Recreation Use (including visitor information services, not including downhill skiing)	MRVDs	735	671
Subcategories of Developed Recreation			

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Activity	Unit of Measure	2001-2010 Avg. Annual Projected Outputs	FY 2003 Outputs
Developed Recreation Capacity, public sector	MRVDs	592	614
Developed Recreation Capacity, private Sector (except downhill Skiing)	MRVDs	545	495
Downhill Skiing			
Downhill Skiing Capacity	MRVDs	25	25
Downhill Ski Use	MRVDs	18	9
Dispersed Recreation			
Total Dispersed Recreation Capacity (not including wilderness)	MRVDs	2,163	2,174
Total Dispersed Recreation Use (not including Wilderness)	MRVDs	1,063	904
Dispersed Recreation Capacity by Recreation Opportunity Spectrum Setting			
Primitive & Semi Primitive Nonmotorized Setting (outside of wilderness)	MRVDs	215	215
Semi-Primitive Motorized Setting	MRVDs	311	311
Roaded Natural and Rural Setting	MRVDs	1,648	1,648
Dispersed Recreation Use by Recreation Opportunity Spectrum Setting			
Primitive & Semi Primitive Nonmotorized Setting (outside of wilderness)	MRVDs	129	54
Semi-Primitive Motorized Setting	MRVDs	290	216
Roaded Natural and Rural Setting	MRVDs	644	629
Number of Trailheads with Access for all Classes of Vehicles (incremental over previous period)	Total number (1978-1998)	Not Estimated	Not Estimated
Trail Construction/reconstruction	Miles	2.9	2.7
Wilderness			
Wilderness Management	Acres	189,000	189,000
Wilderness Capacity	MRVDs	124	124
Wilderness Use	MRVDs	110	55
Lands			
Land Purchase and Acquisition	Acres	Not Estimated	0
Right-of-Way Acquisitions	Total Cases Each Period	0	0
Occupancy Trespass	Cases	4	1
Landline Location	Miles	38	4

Activity	Unit of Measure	2001-2010 Avg. Annual Projected Outputs	FY 2003 Outputs
Facilities			
Road Construction			
Arterials	Miles	1.9	0
Local Roads	Miles	18	0.1
Road Reconstruction			
Arterials	Miles	1.9	0.1
Local Roads	Miles	8	0.0
Human and Community Development			
Human Resource program (includes all programs except YCC and Job Corp)	Enrollee years	12	None
Job Corp	Enrollee years	Not estimated	~
Expenditures			
Operation and Maintenance	Million Dollars	3.42	6.17
Capital Investment	Million Dollars	3.33	1.57
General Administration	Million Dollars	1.61	1.45
Long Range Fixed Costs	Million Dollars	0.99	0.75
Total Budget	Million Dollars	10.32	9.94
Returns to Treasury	Million Dollars	2.14	0.80

Achieving Objectives of the Forest Plan

A review of the previous table indicates the variability in accomplishments. Outputs often vary substantially from year to year as funding levels change. The trends in various resource areas over a three- to five-year period are a better reflection of whether or not the Forest Service is progressing toward accomplishment of its goals and objectives to reach the desired future condition. A more detailed discussion is contained in the narratives for individual resource areas.

The single factor that has the most influence on outputs and program effectiveness is the annual budget. Distribution of our funds often reflects national direction and priorities of the administration and Congress. Traditionally, we have been funded at a level significantly below what was projected to implement the forest plan. The fiscal year 2000 funding level was approximately 80 percent of our projected forest plan need. Moreover, the dollars were not adequately distributed to meet the needs for individual program areas.

For the past several years, we have been using a system of project budgeting, often referred to as a "unified budget." Employees plan this budget and execute projects on a Forestwide basis and trade-offs are realized at the beginning of the fiscal year. We have made an effort to "cap" our fixed costs (permanent employees' salaries, vehicles, rent and utilities, etc.) at 70 percent of the annual budget. The remaining 30 percent of the annual budget is to be used to provide flexibility

to fund a seasonal workforce, provide training, purchase equipment, and deal with unplanned events. At present, we have little control at this organizational level in budget planning and distribution into the future.

MONITORING RESULTS

PHYSICAL COMPONENTS

Introduction

This report describes the various monitoring and accomplishments completed by the Bighorn National Forest aquatics group during 2003. The Forest aquatics program encompasses the soil, air, water, aquatic habitat, riparian vegetation, oil and gas, and minerals programs.

The aquatics program provides support to other functions on the Forest. In 2003 the team supported the Clear/Crazy C Area travel management plan, Tongue grazing allotment plan revision, and Woodrock timber NEPA projects. During the fire season, the team provided up to a month of time individually supporting fire suppression efforts across the Region.

Forest plan standards and guidelines are usually addressed during project planning, however, during project implementation they may not always be reviewed due to time and personnel limitations. Project monitoring where standards and guidelines and Best Management Practices have been implemented demonstrates that forest plan direction should protect the soil and water resources.

Water

Program Summary

The aquatics program provides leadership and support to various other resource groups in maintaining or improving water quality across the Forest. This is typically done through project level implementation by reducing sediment or other pollutants to the hydrologic system in accordance with the Clean Water Act and other state and federal laws.

Water quality across the Forest ranges from degraded to pristine, with the overall water quality generally considered to be good. The most common cause of water quality degradation is chronic sediment delivery from roads, stream crossings, and channel scour. Other impacts to water quality come from recreation, livestock grazing, timber sales, and off-road travel. Timber sale and grazing reviews show that when Best Management Practices (BMPs) are properly applied, there is no detectable change in water quality.

During the summer of 2000, the state of Wyoming conducted a review of BMP implementation and effectiveness across the state. One randomly selected timber sale was Caribou. The audit found that streamside management zones were effective in preventing water quality impacts as well as maintaining channel stability.

Monitoring Requirement: Potable water source compliance with state and federal health and sanitation codes to protect public health.

The engineering program on the Forest is responsible for monitoring water quality at developed sites across the Forest. Monitoring includes water sampling of wells at campgrounds and special use areas during the spring and summer months. This is accomplished yearly, and any deviations from water quality standards are addressed immediately and corrected before the water source is used for human consumption.

Monitoring Requirement: Water quality for compliance with state and federal water quality laws.

The Hunter Creek TMDL project was completed in 2003. The Hunter Creek road was identified as a chronic source of sediment to the Clear Creek drainage. Road reconstruction to minimize sediment input resulted in a removal of Hunter Creek from the state's 303(d) list, putting the Forest in compliance with state and federal water quality laws for that stream.

Granite Creek is also on the 303(d) list; no monitoring or evaluation was conducted on this stream during 2003.

Assessments are characterizations of ecosystems above the project level; they provide information relevant to land management decisions. During 2003, the aquatics group completed a watershed scale inventory of approximately 70 culverts on the southern portion of Forest in the Clear Creek, Crazy Woman Creek, and North Fork Powder River watersheds. The inventory consisted of evaluating roads and trails at stream crossings for effects on water quality.

Air Quality

Program Summary

The 189,000-acre Cloud Peak Wilderness is a Class II airshed that is protected under the Clean Air Act. It has beautiful views and outstanding scenery that could be impacted by air pollution. There are few threats to the air quality from local sources, but sources outside the area such as global acid rain depositions and coal bed methane development east of the Forest may pose a larger threat in the future.

In 1995, the Forest installed a camera on the southern end of the Forest (Grouse Mountain) to monitor visibility. The purpose of the camera was to monitor the long-term air resource of the Cloud Peak Wilderness.¹ Two photographs of Mather Peaks were taken daily between the years 1995-2001. These photographs were analyzed to determine whether or not there has been an increase in particulate matter over time.

The Wyoming Department of Environmental Quality/Air Quality Division has since placed an automated air quality monitoring station on Hunter Mesa in coordination with the Forest. This station has replaced the existing visibility camera on Grouse Mountain and will remain operational indefinitely.

¹ <http://www.wyvisnet.com/gallery/CLPE/start.htm>

Monitoring Requirement: Meet air quality standards for prescribed burning implementation

Compliance with federal and state air quality standards was adhered to during prescribed fire projects. Prior to burn events, the Forest Supervisor approves a prescribed fire plan, and a request for burn permit is filed with the Wyoming Department of Environmental Quality – Air Quality office. The request for permit is accompanied by burn data that includes the number of acres to be burned, type of fuels, and a SASEM report, which predicts the amount of particulate matter to be produced and models smoke drift under various weather conditions. Upon approval of the permit, a weather forecast is obtained the day prior to, or the day of, the actual burn for predicted smoke/fire behavior and weather conditions. Monitoring of wind direction and smoke dispersal was performed during the prescribed burn to ensure compliance with air quality regulations.

Minerals

Monitoring Requirement: Compliance with operating plans and consistency with plan

Only one active mine on the Forest maintained an operating plan in 2003. The mine is a kaolinite clay mine in the headwaters of the South Paintrock drainage. The mine is a small operation where hand tools, such as pick and shovel, are used to extract the clay. The operators used a heavy equipment to extract mineral, which is not a part of their operating plan. This activity did not result in any adverse impacts, and for the most part, the operators were in compliance with the terms of their operating plans during 2003 and consistent with the Forest Plan.

Soils

Program Summary

The primary goal of the program for soil management is to maintain or enhance long-term site productivity. There are five categories of physical soil disturbances that have been found to affect soil productivity. The categories include: compaction, displacement, erosion, puddling, and severely burned. The aquatics program utilizes soils data, from the Forest soil survey, as much as possible so that management activities may be blended with the ecological capabilities and potential of the land.

Monitoring Requirement: Ground-disturbing activities that have the potential to alter soil productivity

Best Management Practices are usually applied at the project level to reduce the impacts of ground disturbing activities. No specific monitoring was applied during 2003 to evaluate soil productivity related to ground-disturbing activities.

Fish and Riparian

Program Summary

Managing habitat for native fish species and non-native demand game fish is a priority on the Forest. Currently, the Bighorn has one subspecies of native cutthroat trout (Yellowstone), a Region 2 sensitive species. Once a native population of cutthroat trout is identified, habitat improvement and recovery efforts will be planned as needed. The aquatics group has been working cooperatively with the Wyoming Game and Fish Department to monitor and inventory habitat and populations for native and non-native demand game fish across the Forest.

Riparian vegetation is a large component of aquatic habitat, as it helps provide streambank stability, stream shading, and organic material in the form of insects and vegetation. The aquatics program manages riparian vegetation in conjunction with the range staff to improve or maintain riparian conditions across the Forest.

The condition of riparian areas across the Forest ranges from degraded to fully functional. The riparian areas most at risk are those located in meadows and grasslands. Timbered riparian areas are generally in good condition and are adequately protected when Best Management Practices (BMPs) are properly applied; however, non-timbered riparian areas are subject to improper grazing by livestock and wildlife. Changes are being made during allotment management plan revisions in the type of grazing system, season of use, riding plans, exclosures, and livestock numbers. These changes are reducing the level of impact on riparian ecosystems.

During 2003, the aquatics program completed channel and riparian restoration work on one mile of the South Tongue River near the Dead Swede Campground. This site will be used as a demonstration project with Wyoming Game and Fish to show how fish and water objectives can be used to restore the structure and function of a large fishery stream on the Forest.

Implementation Monitoring

Monitoring Requirement (1): Fish/riparian habitat rating

The aquatics program typically inventories a proportion of stream reaches on the Forest as part of large scale watershed analyses for NEPA projects. These inventories provide an assessment of the distribution and condition of aquatic habitat and are integrated into the planning, analysis, and execution of projects and activities on the Forest (e.g., roads analysis, forest planning, and NEPA). Specific reach-level aquatic inventories were not conducted in 2003 because of budget and time constraints.

Assessments are characterizations of ecosystems above the project level; they provide information relevant to land management decisions. During 2003, the aquatics group completed watershed scale inventories on the southern portion of Forest. At stream crossings, roads and trails were evaluated for effects on fish habitat and riparian vegetation. The following watersheds were inventoried during the 2003 field season:

- ◆ Clear Creek
- ◆ Crazy Woman Creek
- ◆ North Fork Powder River

Monitoring Requirement (2): Fish population trends

During 2003, Wyoming Game and Fish Department inventoried populations of fish species across the Forest. These inventories were conducted in coordination with the Forest and included Yellowstone cutthroat trout. The following stations were inventoried:

- ◆ Little Bighorn River (2 stations annually): The Wyoming Game and Fish Department maintains data for this location.
- ◆ North Tongue River (4 stations annually): The Wyoming Game and Fish Department maintains data for this location.
- ◆ Bull Creek (1 station annually): The Wyoming Game and Fish Department maintains data for this location.
- ◆ South Piney Creek, below Willow Park Reservoir (1 station): The Wyoming Game and Fish Department maintains data for this location.
- ◆ North Fork Clear Creek (1 station for monitoring of culvert replacement on Highway 16). This was the first year of inventory and monitoring for the site and no trend data is available, but it appears that the new culvert is a barrier to fish migration.
- ◆ South Fork Paintrock Creek (ocular presence/absence): The aquatics group has been observing a population of Yellowstone cutthroat trout on this stream over the past few years. The population was established in the upper section of South Paintrock Creek, above a barrier at the confluence with Soldier Creek, by a previous fisheries biologist. The fish in this section of stream are isolated and grow large, probably due to the abundance of grasshoppers in the area. There appears to be limited spawning habitat in this section of stream and young of the year were only observed one year, during an electrofishing inventory. No fish were observed in 2003, and the population is probably in decline and will not persist.

During 2003, ten sites were inventoried to monitor fish population trends.

Monitoring Requirement (3): Macroinvertebrates

Monitoring and evaluation of macroinvertebrates were not conducted in 2003. Budgetary, time, and logistical constraints were the limiting factors.

Monitoring Requirement (4): Riparian ecosystem trends

During 2003, streams were improved or maintained with construction and maintenance of riparian exclosures, along with implementing changes in riparian grazing strategies. These activities were conducted across the Forest as part of allotment management plan revisions.

Plans for FY2004

The next fiscal year will be challenging for the aquatics program. For example, the Forest will be finalizing the forest plan revision process. The revision will have consumed a large percentage of time during the previous fiscal year, and additional monitoring and evaluation may be possible.

- ◆ Monitor effectiveness of Tongue Watershed Improvement Project to see if stream crossings and sediment control structures are functioning as expected.

- ◆ Survey the stream channel stabilization project at the Dead Swede campground. This will be done after spring runoff for revegetation, channel stability, and aquatic biota.
- ◆ Review Best Management Practices for timber and grazing project level activities.

BIOLOGICAL COMPONENTS

Insects and Disease

In 2003, the Forest and the Forest Health Management Service Center in Rapid City conducted follow-up ground surveys from the 2001 aerial survey and last year's ground surveys.

Ponderosa pine forests continue to see relatively high levels of **mountain pine beetle** (*Dendroctonus ponderosae*) on the eastern edge of the Forest. The Forest is in the fourth year of drought, and that has contributed to near epidemic levels of beetle populations in this timber type. Very limited access to these areas, along with poor wood quality, has severely limited any salvage or treatment in this cover type.

Limber pine decline that was reported as far back as 1989 in Tensleep Canyon has progressed to some level into most every limber pine stand on the Forest. Limber pine decline is a combination of mountain pine beetle, white pine blister rust (*Cronartium ribicola*), dwarf mistletoe (*Arceuthobium cyanocarpum*), porcupines, and possibly needle cast diseases. White pine blister rust is an exotic rust that the native limber pine did not evolve with and thus has very limited resistance to. Tensleep, Shell, and Dry Fork Canyons, and Red Grade road all show high rates of infection, while in other areas the infection is just starting. The drought conditions have exacerbated the problem by stressing the trees, making them more susceptible to the other vectors described above. It is now estimated that 90% of the limber pine on the Forest will succumb to this. In 2003 the Forest was successful in collecting seed from limber pine with phenotypic resistance to the rust (trees in areas of infection that have survived while others around them did not). It is recommended to continue to collect seed for (a) genetic seed banking of a species expecting 90% mortality, and (b) to reforest limber pine habitats where and when conditions allow.

Subalpine fir decline has become even more evident on the Forest. Subalpine fir retains its red needles longer after death than other conifer species. Because of this, they continue to be seen for years (up to 4 years) and then visibility decreases as the needles drop. Subalpine fir decline is caused primarily by a combination of western balsam bark beetle (*Dryocoetes confusus*) attacks and root disease (Armillary or Annosus). It is thought that past blow down events combined with the drought has exacerbated the effects of the decline.

The **spruce beetle** (*Dendroctonus rufipennis*) has become very active this past year, in part due to the drought conditions, as well as the age and condition of the spruce on the Forest. Populations can be seen adjacent to blowdown events, especially those not salvaged. Spruce beetle populations are known to increase in blowdown and then move to neighboring stands. Populations on the Bighorn National Forest continue to increase, especially in remote areas or those designated as "roadless" with limitation on salvage opportunities. Noted populations on the Forest include Shell Reservoir, Bald Mountain, the steep canyons south of US 14A, upper granite creek, Dayton Gulch road, and Powder Pass.

Douglas-fir beetle (*Dendroctonus pseudotsugae*) continues to cause significant mortality along the western edge of the Forest. In Shell Canyon, it is now estimated that over 1,000 acres are infected and anticipated to die in the near future. Drought and the advanced age of the Douglas fir are thought to be contributing to the rise in beetle population.

The **lodgepole needlecast fungus** (*Lophodermella montivaga*) continues to be rare, which is attributed to the drought conditions. There have been no known epicenters detected since 1997.

Large areas of **lodgepole pine** with dead tops continue to be observed throughout its range; these areas appear gray from a distance because of the dead and weathered tops. This is caused by **Comandra blister rust** (*Cronartium comandrae*) that kills the tree from the top down. As most of the cones are produced near the top of lodgepole pine, this reduces the amount of seed produced to regenerate these stands. Regeneration treatments of lodgepole stands should consider means to reduce Comandra infection in young stands.

Large acres of **lodgepole pine** are infected with **mistletoe** (*Arceuthobium americanum*). While typically not a direct causal agent of death, it does contribute to reduced overall stand vigor and merchantability. Regeneration treatments of lodgepole stands should consider means to reduce mistletoe infection in young stands.

Gypsy moth trapping on the Forest and by cooperating agencies off-Forest has been ongoing. No moths were trapped in 2003. Continued detection monitoring is needed to keep this exotic pest from becoming established.

Monitoring Requirement—Level of Insect and disease organism, compliance with schedule and outputs

The 1985 Forest Plan projected 800,000 acres of insect and disease survey to be done annually. Per agreement with the Forest Health Management Service Center in Rapid City, complete Forest surveys are scheduled for every three years and were last completed in 2001. Spot surveys, such as those accomplished this year, are conducted to further refine the extent and intensity of specific agents.

Effectiveness Monitoring

Aerial surveys are effective in determining levels of infestation of various pests but are not cost effective annually. Ground validation and spot aerial survey sampling are necessary to determine the Forest pest population levels and what, if any, management actions may be warranted.

Forested Vegetation and Timber

Forested vegetation, its condition, management, and the resultant timber commodity outputs are included in this monitoring and evaluation section.

The 2003 Forest outputs for forested vegetation and related activities are shown in the table of projected and actual outputs (see Table 2), along with the 18-year trends. The outputs are those included in the forest plan monitoring section. The data in this report are from cut-and-sold,

PTSAR² and STARS³ reports, and planned accomplished records in the Forest RMACT⁴ database.

Implementation Monitoring

Monitoring Requirement—Clearcut Harvest Unit Size

Silvicultural prescription, sale design plans, sale maps, and on-the-ground layout of sales were reviewed for compliance with the maximum size limits; no created openings greater than 40 acres were found.

Monitoring Requirement—Assure Regeneration within Allowable Time Frames of Final Harvest

In FY 2003, the Forest surveyed approximately 515 acres of commercial timber sales to determine the status of the regeneration on final harvest units, as defined in 36 CFR 219.27. This year's surveys will be reviewed and certifications made from them in the following winter. Continued monitoring and/or corrective actions are planned for those areas not certified as regenerated. Surveys of past tree plantings indicate generally good success. Harsh site conditions and drought years have reduced some survival.

Non-traditional vegetation management projects continue to be implemented without silvicultural prescriptions on the Forest, including prescribed burning, special uses, and habitat improvement projects. Current policy is to have a silvicultural prescription prepared for all vegetation manipulation projects. Without a prescription, assurance of planned regeneration is not documented.

There continues to be no evidence in the activities database of surveys to assure regeneration or certification of past aspen regeneration treatments meeting forest plan stocking requirements.

Qualitative surveys of recent wildfires have shown varied levels of regeneration. Without harvest, there is no legal timeframe to assure regeneration following wildfires. However, it is good management to monitor regeneration progress and schedule supplemental treatments where necessary. The West Pass Fire shows very little regeneration, while there are indications that Stockwell and Moncreif have some areas with good regeneration starting. Continued monitoring of these and other recent fires should continue to determine regeneration status.

Monitoring Requirement—Assure reforestation and TSI treatments are current and no backlog is created

Four hundred-sixty (460) acres of TSI treatments were accomplished in 2003. Funds taken back to fund the fire season of 2002 were not returned, thus no make-up acres were accomplished. Reforestation data reflect an accurate assessment of our needs. The TSI and release database will require editing to accurately calculate needs.

² Periodic Timber Sale Accounting Report (PSTAR)

³ Sale Tracking and Accomplishment Report (STAR)

⁴ Rocky Mountain Activities (RMACT)

Currently, we are at 110% of the projected TSI output for the planning period. This is within 10% of the 1985 Forest Plan projections. The monitoring plan recommends that deviation beyond 20% be investigated further.

The reforestation needs report in RMACT shows 1,467 acres needing reforestation (1,731 last year). To continue this progress, the Forest should continue the commitment to the reforestation program. The RMACT database shows no change in the needs with no treatments or additions, and 6,920 acres needing Timber Stand Improvement (TSI), and 2,683 acres needing release

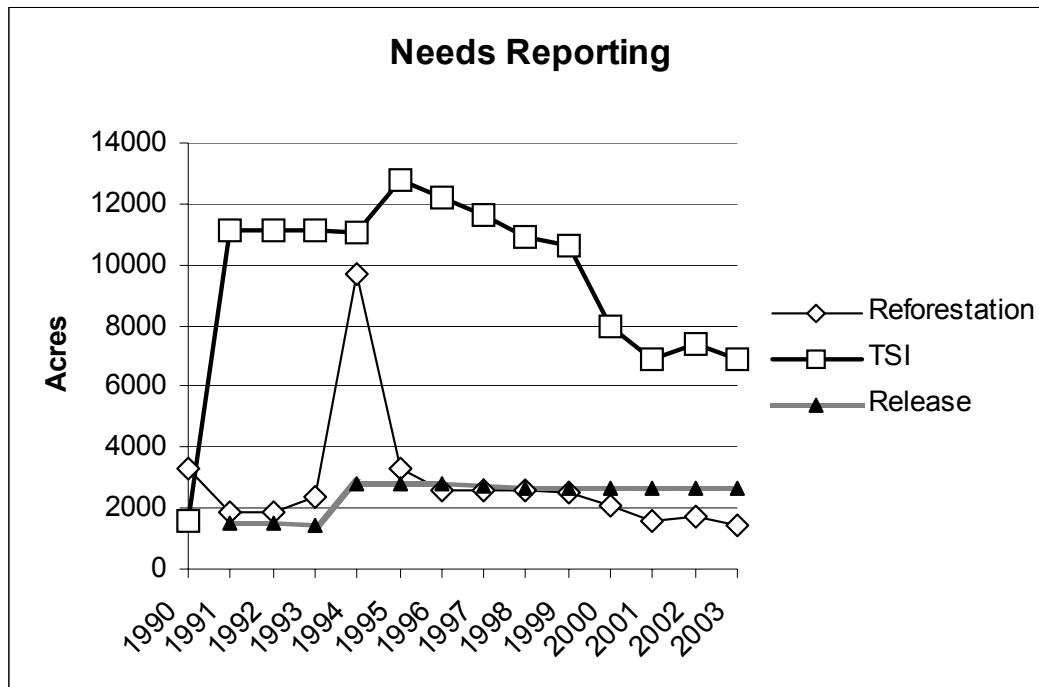


Figure 1. Reforestation, TSI, and release needs since 1990.

Monitoring Requirement—Compliance with schedule and outputs

Implementation and interpretation of the 1985 Forest Plan standards and guidelines may have affected outputs. The 1985 Plan did not differentiate between standards and guidelines. This has sometimes resulted in inconsistent application.

The 1985 Forest Plan included a schedule of timber sales and a table of outputs projected over the planning period. The timber sale schedule was updated with forest plan amendments 1, 2, and 3, after which time, it was determined that the schedule was an administrative decision and did not need to be formalized with a plan amendment. The table of outputs for timber includes the volume offered and the acres thinned, reforested, and harvested by regeneration method. The forest plan (Chapter IV - monitoring and evaluation) identifies a need to initiate further evaluation when there is a deviation of 25% over a three-year period in compliance with scheduled outputs (page IV-3).

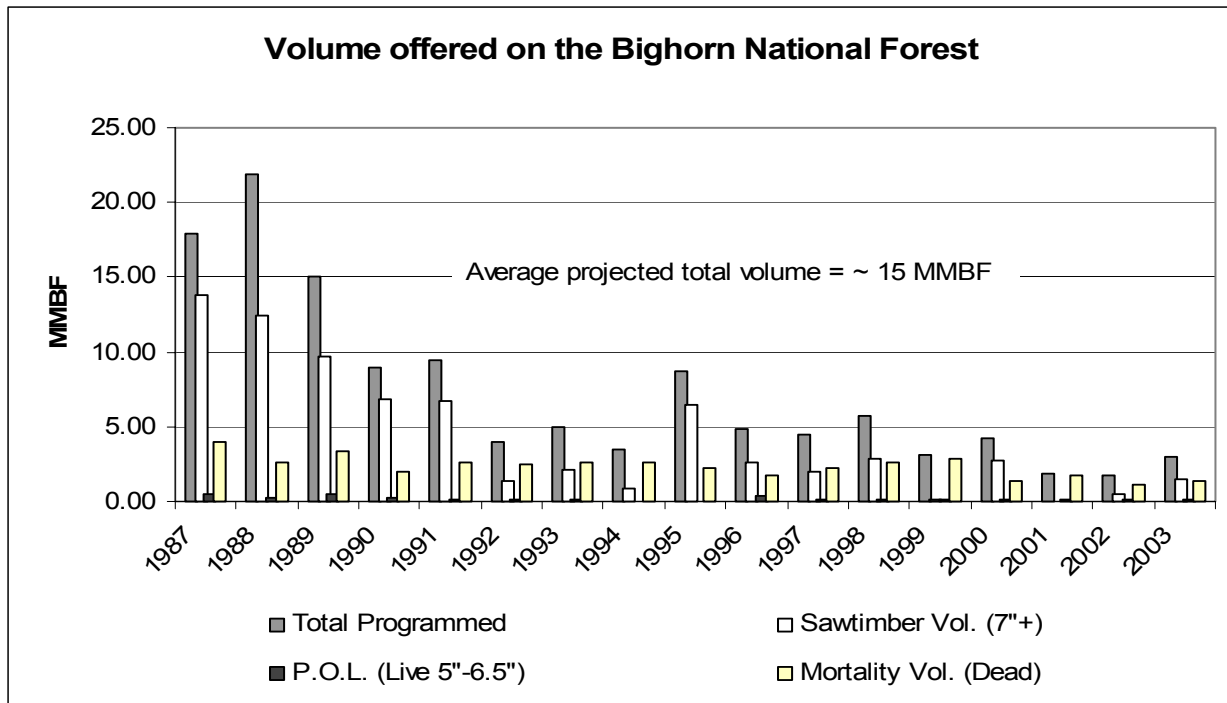
A comparison of accomplished vs. projected outputs has been done with the annual monitoring reports. Table 2 shows the annual accomplishments and compares the total to what was projected in the forest plan.

Current commercial timber offerings are below forest plan projections. Through the end of FY 2003, after 18 years of implementation, the Forest has offered 34.2 million cubic feet, MMCF (137.0 million board feet, MMBF), compared to a projected output of 75.9 MMCF (294.5 MMBF), or 45% of the projected ASQ output (47% last year). The acres offered for harvest by regeneration method are also below projected outputs by over 1/2. There are a number of reasons for this difference:

- ◆ Given a choice between meeting forest plan standards and guidelines and the outputs projected, the Forest has meet or exceeded the standards and guidelines. This has produced lower than projected outputs.
- ◆ Funding levels for many programs are below forest plan projected levels.
- ◆ Appeals and litigation of harvest decisions, or perceived threats thereof.
- ◆ Since 1993, the Forest has been under an administrative timber sale offer cap of between 4.5 to 5.5 MMBF per year. This was the outcome of an ASQ amendment prepared in 1993 but never approved due to concerns over the breadth of the decision. It was determined that the more complete analysis provided in the plan revision scheduled to start a few years later was needed to withstand anticipated appeals.

The following figure shows the difference between the projected allowable sale quantity (ASQ) and our current outputs. Revised projections of timber harvest methods and resultant outputs in wood fiber are included in the ongoing forest plan revision process.

Figure 2. Comparison of projected ASQ and current output on the Bighorn National Forest from 1987 to 2003.



The Ranger Districts have seen demand for fuelwood sales decline as other sources of fuel became more cost efficient. The active fire season in 2003 may have also kept fuelwood gatherers out of the woods. The cumulative removal continues to exceed projections (168%), down from last year.

Post and pole harvest remains stable, with healthy demand exceeding the Forests ability to offer. Teepee poles continue to be in high demand.

The Forest completed 252 acres of tree planting (see Figure 3). Over the planning period, the Forest accomplished 61% of the projected amount of reforestation, about the same as 60% last year.

According to the Forest database, no regeneration cutting of aspen was accomplished in 2003. The Forest Plan objective was to treat 85 acres of aspen annually, but to date, the records show only 26% of that projected output met.

Monitoring Requirement – Status of lands not suited for timber production

The status of lands not suited for timber production is scheduled for re-evaluation every tenth year in the Forest monitoring plan. The last analysis was completed in 1991 with forest plan amendment number seven. The plan lists the “Variability which would Initiate Further Evaluation” as “Data indicates unsuitable lands may be suited.” Monitoring has identified some areas recorded as unsuitable that may be suited, most notable the lower elevation Fool Creek #1 clearcuts, and the lower elevation clearcuts of the Ghastly timber sale, and Douglas-fir sites on north and east aspects. These areas have been noted, and will be included in the suitability analysis underway are part of the forest plan revision process that is projected to be completed in 2005.

Effectiveness Monitoring

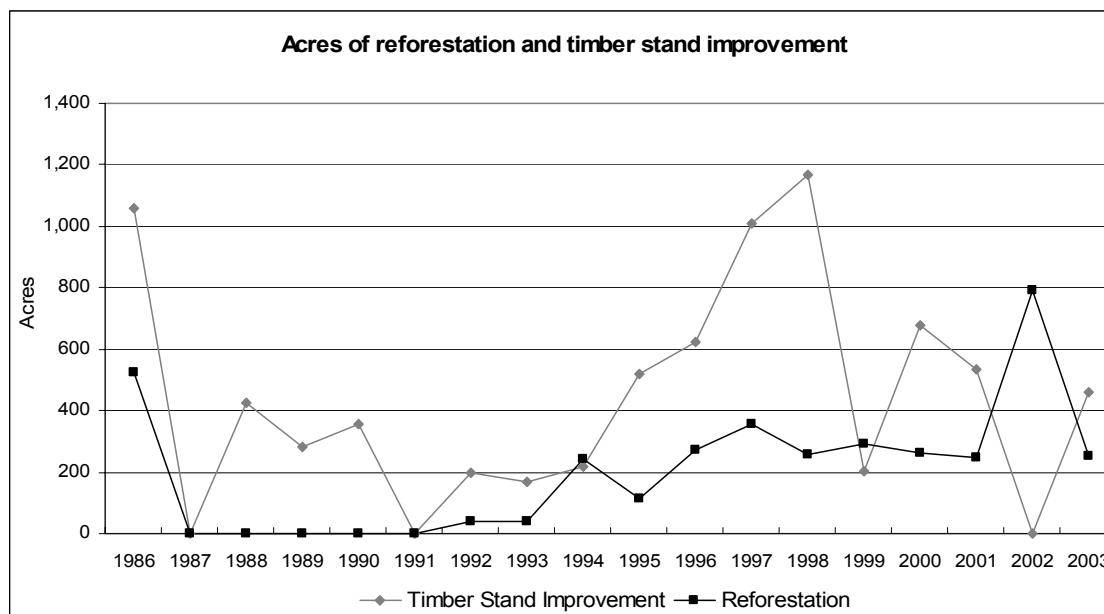
The standards and guidelines pertaining to vegetation management can have a significant effect on the amount and kind of vegetation management allowed, and the resultant outcomes and outputs available, including desired forest conditions and wood fiber volume offered.

There is inconsistent interpretation of the standards and guidelines and how they are to be administered throughout the Forest. The difference between standards and guidelines is also inconsistently interpreted, resulting in guidelines being applied as a standard and visa versa. This has resulted in a different set of standards than those described in the Forest Plan, different outcomes, and fewer outputs than projected.

Current standards and guidelines for silviculture do not provide a full range of silvicultural methods. The last Regional Guide provided revised standards and guidelines for silviculture that if adopted, would help the Forest move towards ecosystem management.

Monitoring in 2003 has again identified a need for the Forest to clarify the requirements for regeneration certification. This has been incorporated into the Draft Revised Forest Plan.

Figure 3. Reforestation and timber stand improvement acres on the Bighorn National Forest from 1986 to 2003.



Validation Monitoring

The acres of treatment by method from the Forest Plan are displayed in the following figure and table. Since the plan was implemented, the Forest has not matched this projected mix or the projected wood fiber outputs. Total acres harvested are 37% of the total projected for the planning period, while reforestation acres are 61% of the projected output, and ASQ is 45% of projected output. It appears that although the total amount of acres and outputs are less than ½ the projected amounts, the ratio of acres and volume are consistent. During the forest plan revision process, there should be a concerted effort to validate the scheduled outputs and the mix of each of these treatment methods.

The Bighorn National Forest management area designations have been found to be too small in size and too numerous in a given watershed to manage for a dominant use on a watershed scale. Watersheds currently do not have a dominant use, or management emphasis, but rather the management emphasis areas are averaged together. This averaging results in management for the average rather than managing for any particular emphasis area. Because of this, management areas are often overlooked in project initiation and implementation. This affects the ability to meet forest plan objectives, outcomes, and outputs.

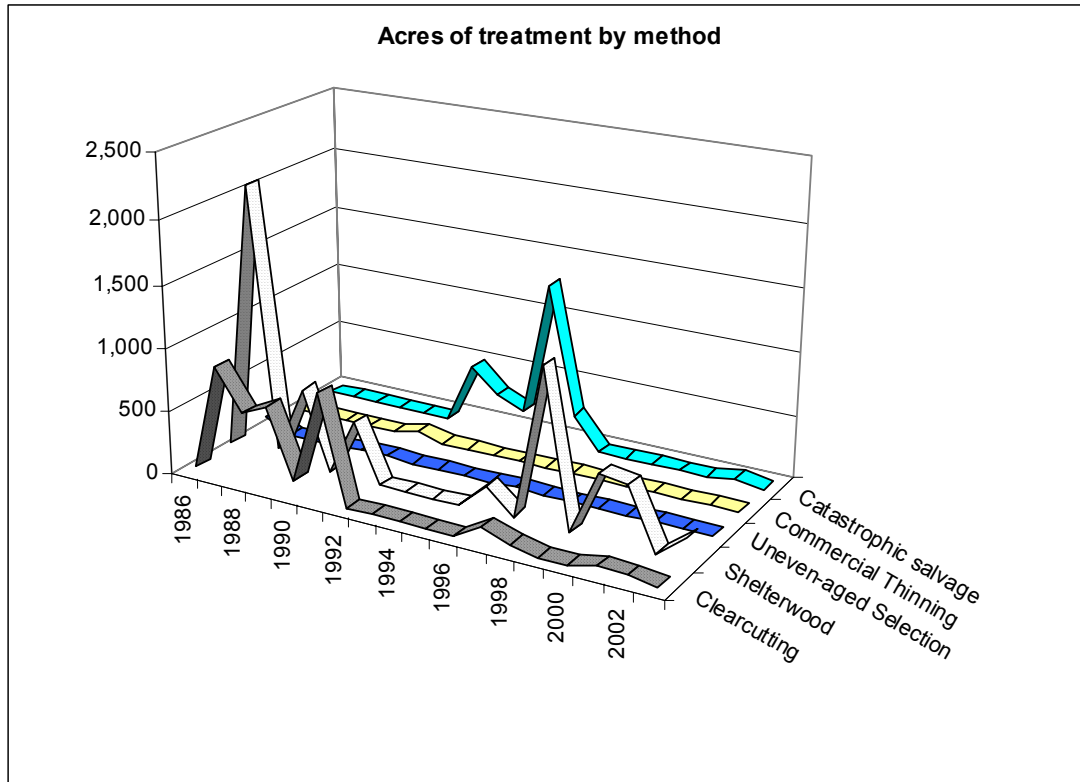


Figure 4. Treated acres, by method, on the Bighorn National Forest from 1986 – 2003.

Table 3. Review of activity and outputs.

Activity	Total Programmed	Sale Volume Offered	Sawtimber Vol. (7"++)	Sawtimber Vol. (7"++)	POL (Live 5"-6.5")	POL (Live 5"-6.5")	Mortality Volume (dead)	Mortality Volume (dead)
Unit of Measure	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF
2001-2010 Average Projected Output	16.5	4.30	14.50	3.80	0.60	0.10	1.40	0.37
1986	14.50	3.30	9.85	2.58	0.70	0.11	4.40	1.16
1987	17.90	4.70	13.86	3.63	0.50	0.08	4.00	1.06
1988	21.90	5.80	12.39	3.25	0.30	0.05	2.60	0.69
1989	15.00	4.00	9.72	2.55	0.50	0.08	3.30	0.87
1990	9.00	2.30	6.80	1.78	0.20	0.03	2.00	0.53
1991	9.40	2.50	6.72	1.76	0.10	0.02	2.60	0.69
1992	4.00	1.00	1.40	0.37	0.10	0.02	2.50	0.66
1993	4.94	1.17	2.16	0.57	0.13	0.02	2.59	0.68
1994	3.45	0.87	0.82	0.19	0.05	0.01	2.58	0.68
1995	8.74	2.17	6.48	1.57	0.04	0.01	2.22	0.59
1996	4.79	1.11	2.62	0.56	0.38	0.10	1.79	0.45
1997	4.43	1.03	1.97	0.41	0.16	0.04	2.30	0.58
1998	5.67	1.15	2.85	0.63	0.16	0.04	2.66	0.48

Activity	Total Programmed	Sale Volume Offered	Sawtimber Vol. (7"+)	Sawtimber Vol. (7"+)	POL (Live 5"-6.5")	POL (Live 5"-6.5")	Mortality Volume (dead)	Mortality Volume (dead)
Unit of Measure	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF
1999	3.10	0.75	0.11	0.03	0.13	0.02	2.86	0.70
2000	4.23	0.84	2.76	0.57	0.15	0.02	1.32	0.24
2001	1.21	0.38	0.03	0.07	0.13	0.03	1.06	0.28
2002	1.76	0.42	0.50	0.11	0.12	0.03	1.14	0.28
2003	2.96	0.66	1.49	0.30	0.11	0.03	1.36	0.33
Total Projected Output	294.5	75.9	261.0	68.4	8.8	1.4	24.7	6.5
Total Actual Output	137.0	34.2	82.5	20.9	4.0	0.7	43.3	11.0
% of Projected Output	47%	45%	32%	31%	45%	53%	175%	168%

Table 3, cont.

Activity	Timber Stand Improvement	Refor-estation	Clear-cutting	Shelter-wood	Uneven-aged Selection	Comm-ercial Thinning	Catas-trophic Salvage	Other	Total of Area Cut
Unit of Measure	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres
2001-2010 Average Projected Output	400	300	1,006	696	89	0	0	0	1,791
1986	1,060	525	22	52	106	0	0	0	180
1987	0	0	881	2,159	0	0	0	0	3,040
1988	426	0	555	108	0	0	0	0	663
1989	280	0	657	629	0	0	0	0	1,286
1990	357	0	118	10	13	0	0	0	141
1991	0	0	852	458	17	54	0	0	1,381
1992	200	40	0	0	0	0	486	0	486
1993	170	40	0	0	0	0	297	0	297
1994	220	242	0	0	0	0	198	0	198
1995	519	113	0	0	0	0	1,282	0	1,282
1996	622	272	0	202	15	0	256	84	557
1997	1,009	355	124	14	0	0	0	0	138
1998	1,169	255	43	1,227	0	0	0	10	1,280
1999	201	290	0	0	0	0	0	0	0
2000	678	264	0	507	0	0	0	0	507
2001	534	248	50	470	0	0	0	0	520
2002	0	790	38	0	0	0	30	0	68
2003	460	252	0	180	0	0	0	12	192
Total	7,200	6,050	19,783	11,338	1,862	none	none	none	32,983

Activity	Timber Stand Improvement	Reforestation	Clear-cutting	Shelter-wood	Uneven-aged Selection	Commercial Thinning	Catastrophic Salvage	Other	Total of Area Cut
Unit of Measure	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres
Projected Output									
Total Actual Output	7,905	3,686	3,340	6,016	151	54	2,549	106	12,216
% of Projected Output	110%	61%	17%	53%	8%	n/a	n/a	n/a	37%

Range

Program Summary

Table 4. Summary of on-the-ground forage utilization determinations.

Riparian Vegetation Monitoring Results				
1. Number of allotments	MW/PR ⁵	PR	TNG ⁶	Forest
Total number of active allotments	34	22	23	
Allotments monitored by permittee	5	7	1	
Allotments monitored by Forest Service (FS)	26	10	17	
Allotments with no data reported	0	6	22	
Allotments in Non-use	3	8		
Percent of allotments monitored by permittee	16%	32%	4%	
Percent of allotments monitored by FS	84%	45%	74%	
Total percent of allotments monitored (does not mean 100% of allotment acreage)	84%	55%	74%	
Allotments exceeding standards to the point of discussing/implementing resource recovery period.	0	2	4	
2. Number of permittees	MW/PR	PR	TNG	Forest
Total number of <i>active</i> permittees	35	24	32	
Number/percent of permittees providing transect data	8 (25%)	15 (63%)	1 (3%)	
Permittees with data not yet turned in	0	3	1	
Permittees not known if collected data	0	6	27	
Permittees in Non-use ⁷	3	9	4	

⁵ MW/PN is Medicine Wheel/Paintrock Ranger District; PR is Powder River Ranger District; TNG is Tongue Ranger District.

⁶ Does not include the Piney, Little Piney, or Willow Park Allotments. These allotments are administered through the Powder River Ranger District and are included in the Powder River Ranger District figures.

3. Number of Forage Utilization Transects⁸	MW/PR	PR	TNG	Forest
Stubble Height Transects				
Transects read by permittees	7	41	0	
Number & percent that met standards	6 (86%)	40 (98%)	NA	
Transects read/spot-checked by FS	15	46	49	
Number & percent that met standards	6 (40%)	34 (74%)	33 (67%)	
Transects read by FS and permittee	2	1	4	
Number & percent that met standards	1 (50%)	0 (0%)	4 (100%)	
Transects read by contractor			26	
Number & percent that met standards			18 (65%)	
Total number of transects read	24	87	79	
Total number & percent meeting standards	13 (54%)	74 (85%)	55 (70%)	
Utilization Cages (Paired Plot)				
Cages read by permittees			0	
Number & percent that met standards			NA	
Cages read/spot-checked by FS			12	
Number & percent that met standards			6 (50%)	
Cages read by contractor			9	
Number & percent that met standards			6 (67%)	
Total cages read			21	
Total number & percent meeting standards			12 (57%)	
4. Number of willow utilization transects⁹	MW/PR	PR	TNG	Forest
Transects read by permittees	0		0	
Number & percent that met standards			NA	
Transects read/spot-checked by FS	0		10	
Number & percent that met standards			NA	
Transects read by FS and permittee	0			
Number & percent that met standards				
Total number of transects read	0		10	
Total number & percent meeting standards			NA	

⁷ Numerous permittees are in partial non-use due to the drought

⁸ Not all monitoring information has been turned in to date by permittees; there will be additional numbers of photo points and transects read for the 2003 monitoring that are not reflected here.

⁹ No intensive monitoring of willow utilization by wildlife and domestic livestock was conducted on various allotments during the 2002 grazing season.

5. Number of aspen utilization transects	MW/PR	PR	TNG	Forest
Transects read by permittees	0		0	
Number & percent that met standards			NA	
Transects read/spot-checked by FS	4		0	
Number & percent that met standards	3 (75%)		NA	
Transects read by FS and permittee	0			
Number & percent that met standards				
Total number of transects read	4		0	
Total number & percent meeting standards	3 (75%)		NA	
6. Number of bank stability readings	MW/PR	PR	TNG	Forest
Transects read by permittees	0		0	
Number & percent that met standards			NA	
Transects read/spot-checked by FS	0		0	
Number & percent that met standards			NA	
Transects read by FS and permittee				
Number & percent that met standards				
Total number of transects read	0		0	
Total number & percent meeting standards			NA	
7. Photopoints	MW/PR	PR	TNG	Forest
Recorded by permittee	1			
Recorded by FS ¹⁰	19	20	58	
Recorded by FS and permittee	2			
Total photopoints recorded	22	20	58	

Upland Vegetation Monitoring Results

1. Upland forage utilization samples	MW/PR	PR	TNG	Forest
Samples recorded by permittees				
Number & percent that met standards				
Samples recorded/spot-checked by FS		8		
Number & percent that met standards		7 (88%)		
Samples recorded by FS and permittee				
Number & percent that met standards				
Total number of samples recorded		8		
Total number & percent meeting standards		7 (88%)		

Not all monitoring information has been turned in to date by permittees. There will be additional photopoints and transects read for 2003 monitoring that are not currently reflected in the Tongue Ranger District data.

¹⁰ The majority of the photopoints are tied to aspen, willow, and streambank transects.

DISTRICT SUMMARIES

MEDICINE WHEEL/PAINTROCK RANGER DISTRICT

NEPA analysis for Allotment Management Plan Revisions occurs annually on selected allotments on a watershed basis across the Forest. During these analyses, the following data is collected: stream condition and trend, riparian vegetation, re-reading of Parker 3 step transects for trend, re-photographing of photo points, etc. No data was collected in 2003. The following discussion summarizes the 2002 data and analyses for the Paintrock Analysis Area Allotment Management Plan Revisions. That data is included below where applicable.

Monitoring Requirement - Range Condition and Trend

Condition and trend data was collected during the 2002 field season on the Trapper Creek, Forks, and Dry Fork-Medicine Lodge C&H allotments for the Environmental Analysis for the Paintrock Analysis Area Allotment Management Plan Revisions. The data was summarized in the spring of 2003 and showed the following:

- ◆ **Dry Fork Medicine Lodge C&H** has three Parker 3-step transects, and these showed a stable trend over a 40-year period. One of these sites was rated as Poor + which is unsatisfactory condition and the other 3 were F+ and G+, which is satisfactory condition. Satisfactory condition is rated as fair condition with an upward trend, including good and excellent condition ranges. Unsatisfactory is considered poor with a stable or downward trend, including poor condition range.
- ◆ **The Forks C&H allotment** has seven Parker 3-step transects; results indicated little or no significant change in upland range condition over the past 25 years.

Permanent photo points have been established to monitor long-term trend in riparian areas on each allotment on the district, most established within the past 10 years. These are visual observations and photo points are retaken every 1-3 years.

No riparian classification data was collected in 2003 on the Medicine Wheel/Paintrock District. It is expected that determination on trend in riparian areas may be made every 10-20 years based on visual changes in species composition on riparian areas, willow height and expansion, stream channel width, healing of cut banks, etc.

Monitoring Requirement - Forage Utilization (Upland Range Sites)

Forage utilization was monitored on upland range sites across the Medicine Wheel-Paintrock Ranger District. Utilization refers to the range of utilization levels that occurred within a given pasture in the upland sites. Stubble height transects were run under some aspen stands to determine if the appropriate level of stubble was left. Forage utilization (using stubble height) was also conducted in riparian areas on key areas. Stubble height is the height of forage remaining after grazing. Aspen and willow browse transects have also been established in some areas, to monitor the percent of current growth removed by livestock/wildlife or wildlife alone. Portions of 26 allotments were monitored in 2003 using either height/weight curves, ocular estimates, or stubble height to determine the percent utilization on key species. The information is summarized by allotment and pasture in a table that shows the range of utilization levels. This table is not attached, but is available if requested.

Monitoring Requirement - Carrying Capacity

No formal range analysis to determine carrying capacity was conducted in 2003. There is one active Coordinated Resource Management Plan (CRMP) which is an ongoing process, and changes in management are made as needed. Through discussions with permittees on the Dry Fork Medicine Lodge and Trapper Creek C&H allotments and monitoring of utilization levels for several years, it has been proposed in the Paintrock Analysis Area EA that these 2 allotments be combined into one. This proposal is currently being analyzed and would result in greater flexibility for the permittee, improved management on the ground, improved summer range for elk. There has also been a voluntary waiver of a portion of a term permit back to the government, which has resulted in a reduction in stocking on these 2 allotments. This involves the permittee in the active CRM.

TONGUE RANGER DISTRICT

WILLOW TRANSECTS

The following table displays results of browse transects in willow communities to monitor the amount of the current year's growth of marked willows by wildlife and livestock. Transects identified as wildlife/cattle show the percentage of marked twigs browsed during the time period livestock were in the pasture. Transects identified as wildlife show the percentage of marked twigs browsed during the time period or partial time period when livestock were not in the pasture.

Table 5. Utilization in willow communities in the Copper Creek and Lower Tongue allotments.

Allotment	Pasture or Area	Wildlife/Cattle	Method	Time Period Monitored	Percent Use
Copper Creek	Copper Creek	Wildlife	Marked Twigs	9/11/02	59%
				7/03/03	
	South Tongue	Wildlife	Marked Twigs	9/05/02	62%
				7/03/03	
Lower Tongue	Little Willow	Wildlife	Marked Twigs	9/11/02	11%
				7/04/03	
	Sheeley Creek	Wildlife	Marked Twigs	8/12/02	56%
				7/04/03	
	Sheeley Creek	Wildlife	Marked Twigs	7/04/03	1%
				7/17/03	
	Sheeley Creek	WL/Cattle	Marked Twigs	7/17/03	13%
				7/31/03	
	East Experimental T1	Wildlife	Marked Twigs	7/04/02	26%
				7/05/03	
East Experimental T2	Wildlife	Marked Twigs	7/02/02	33%	
			7/05/03		
West Experimental T1	Wildlife	Marked Twigs	7/03/02	45%	
			7/07/03		
West Experimental T2	Wildlife	Marked Twigs	7/03/02	12%	
			7/07/03		

UPLAND UTILIZATION

Table 6. Utilization of upland vegetation in Tongue Ranger District allotments (2003).

Allotment	Pasture/Location	Monitored By	Vegetation Type	Method Used	Utilization
Amsden	Face Pond #489	FS	Upland	Ocular	40-50% -Draws 50-60% -Ridgetops
	Arney's Cross	FS	Upland	Ocular	40-50%
	Cabin	FS	Upland	Ocular	60+%
Big Goose	Babione Creek	FS	Upland	Ocular	35% -Sidehills 60-65% -Poa/Carex
	Big Goose Park	FS	Upland	Ocular	Light
Freezeout East	Ridge Cage 1	FS	Upland	Paired Plot	6%
	Cage 2			Paired Plot	22%
	Cage 3			Paired Plot	32%
	River Cage 4	FS	Upland	Paired Plot	47%
	Cage 5			Paired Plot	73%
	Rockwood			Ocular	20%
	Arch Site			Ocular	60-65%
	Tank #313			Ocular	60%
	South Cage 6	FS	Upland	Paired Plot	10%
	Cage 7				70%
Freezeout West	Dry Fork Cage 1	Contractor	Upland	Paired Plot	N/A
	Cage 2				53%
	Cage 3				21%
	Hay Creek Hay Cr. Cage	Contractor	Upland	Paired Plot	12%
	Fool Cr. Cage				40%
	Schuler Park Cage 1	Contractor	Upland	Paired Plot	24%
	Cage 2				58%
	Cage 3				84%
	Sheep Creek	Contractor	Upland	Paired Plot	N/A
	Lake Creek	Lake Creek	FS	Upland	Ocular
Lick Creek		FS	Upland	Ocular	Light-Medium
Bear Trap		FS	Upland	Ocular	30%
Cow Camp		FS	Upland	Ocular	60%

POWDER RIVER RANGER DISTRICT

NEPA analysis for Allotment Management Plan Revisions occurs annually on selected allotments on a watershed basis across the Forest. During these analyses, the following data is collected: stream condition and trend, riparian vegetation, re-reading of Parker 3 step transects for trend, re-photographing of photo points, etc. Any data collected for a given Fiscal Year that meets the monitoring requirements is discussed below. In 2003, data was collected on Mistymoon S&G Allotment as described below, with office reviews and preliminary field checks initiated in preparation for further data collection in year 2004 for Battle Park and Mistymoon S&G Allotments.

Monitoring Requirement – Carrying Capacity

There was no formal range analysis to determine carrying capacity in 2003.

Monitoring Requirement – Range Condition and Trend

One Parker 3-step transect was read on Bald Ridge S&G Allotment, Powder River Ranger District, and a Cover Frequency Transect established in its location. Range condition and trend were not assessed; however it was noted that hits on native perennial grasses and grass-like plants were significantly down compared to previous readings, hits on forbs were up, and hits on litter were up significantly. A file review of all Parker 3-step clusters on Battle Park C&H Allotment was completed. None were found available to be read.

RARE PLANTS

A one-person crew inventoried approximately 291,265 acres of project areas, including Tongue AMP, Woodrock Timber Sale, C Area Analysis, West Tensleep Fuels, and Southwest Fuels Project. Inventory areas were selected by reviewing known element occurrences for habitat, soils, elevations, aspects, etc. New plant locations were confirmed by specimen collection, which was authenticated by Wyoming Natural Diversity Database (WYNDD) personnel.

One new site for *Arnica lonchophylla* was documented.

In addition to the FY03 Region 2 Sensitive Plant Species, additional species searched for included *Spiranthes diluvialis*, *Cypripedium montanum*, *Cypripedium parviflorum*, *Eriophorum chamissonis*, *Physaria didymocarpa* var. *lanata*, *Parnassia kotzebuei*, and *Utricularia minor*.

Spiranthes diluvialis is the only threatened plant species in Wyoming. This year, surveys were conducted at the “best” sites looked at in FY02. Again, no plants were found this year. Two of the sites were visited by Brad Rogers of the U.S. Fish and Wildlife Service (FWS). As a result of this visit, Mr. Rogers concluded that there was not any suitable habitat for *S. diluvialis* and a subsequent letter from the FWS removed *S. diluvialis* from the list of Threatened Species for the Bighorn National Forest.

Other species on the Region 2 draft Sensitive Species list were searched for. Of those species searched for, new populations were found for *Cypripedium parviflorum* (1) and *Eriophorum chamissonis* (2).

2003 was the fourth year of *Rubus acaulis* population trend monitoring. WYNDD botanist Walt Fertig developed this protocol in 1999. The objective of this monitoring is to detect whether or

not the population is increasing, decreasing, or remaining stable. Considering the *Rubus* inventories done when the plant was “discovered” in 1996 and additional surveys thereafter, it is very likely that this is the only occurrence of this species on the Bighorn. There are six sampling plots on the Forest. In four of the six, there has been no significant change. However, two plots showed a statistically significant increase in plant frequency. These changes may be attributed to the apparent increase in moisture following the winter of 2002/2003.

A new monitoring project was started for *Cypripedium montanum* in the Story Project Area. Six plots (2 controls outside the treatment units and 4 within the treatment units) were established prior to operations and will be monitored over time for canopy cover, species composition, number of plants, number of stems, height of stems, number of flowers, and duff and litter depth. In addition, over 800 (300 wooden stakes and 500 pin flags) plants were marked within the treatment units to prevent damage during operations.

Table 7. FY03 Sensitive species on the Bighorn National Forest.

Sensitive Species	New Occurrences in FY 2002	Expanded Occurrences in 2002	Previously Known Occurrences
<i>Agoseris lackshewitzii</i>	0	0	37
<i>Aster mollis</i>	0	1	36
<i>Arnica lonchophylla</i>	1	0	23
<i>Botrichium ascendens</i>	0	0	1
<i>Festuca hallii</i>	0	0	1(?)
<i>Penstemon caryi</i>	0	0	13
<i>Rubus acaulis</i>	0	0	1
<i>Sullivantia hapemanii</i> var. <i>hapemanii</i>	0	0	14

Wildlife

The wildlife program on the Bighorn National Forest consists of treatments to improve habitat for many species including Management Indicator Species (MIS) and Threatened, Endangered, and Forest Service Sensitive Species (TES); inventory and monitoring for habitats and specific MIS/TES species; support to other resource projects through inventory and environmental analysis; and conservation education presentations. Habitats currently emphasized are aspen, shrublands, and riparian areas. Treatments include exclosure construction and maintenance, prescribed burning, and mechanical regeneration treatments. The Forest coordinates with the Sheridan and Cody Regions of the Wyoming Game and Fish Department (WYGF) in managing populations of wildlife. Three District biologists accomplish the majority of the wildlife related work on the Forest. A Forest-level biologist assists in plan revision and program management.

Lynx (TES species): The Bighorn has participated in the lynx survey following the National Lynx Detection Protocol. This survey required three consecutive years of data collection and was completed in FY 2002, with stations on the northern end of the Forest. Mountain lions, bobcats, black bears, and coyotes have been the only species detected, but no lynx. During this fiscal year, the Forest received reports of two lynx observations. One was from the Battle Park area, and the other in Shell Canyon. Both reporters seemed confident on their observations, however tracks were not followed to confirm the observations.

Bats: Six bat houses were monitored this year on the Forest. The plan was to monitor all houses at least twice each month; once during daylight hours and once after dark. Time constraints did not allow for sufficient monitoring, and most houses were only checked once during the summer and only during daylight hours. The structure at the Sheridan Work Center contained two unknown myotis. The other five bat houses were also not used this year.

Caves provide habitat for sensitive bat species on Bighorn NF. During FY2003, no caves on the Medicine Wheel/Paintrock District were surveyed for bat occurrence. Survey of some caves on the District are planned during the fall and winter of FY2004, and results will be reported in the FY2004 monitoring report. Caves on the Tongue District were resurveyed in conjunction with the WGFD (Laurie VanFleet) non-game department in Lander. The caves had last been surveyed in approximately 1995. The caves surveyed included Eaton's, Cliff Dweller's, and Big Piney. The monitoring records for this were compiled and retained by the WGFD.

Boreal owls: One night was spent surveying in the Dayton Gulch road area, with one stop-over near the Burgess Junction area. Species detected included great horned and northern saw-whet owls; no boreal owls or great gray owls were detected.

Goshawks: No active goshawk nests were observed on the Tongue District during the 2003 nesting season. The Twin Nickel Timber Sale area was surveyed three times during the 2003 nesting season and although adult goshawks were observed, no active nest could be located. One historic nest area on the Powder River District was searched for in the area (broadcast calls) of Dullknife Reservoir, but no goshawks had been found, and adjacent private land had been thinned to the point that suitable goshawk habitat was not likely still present. Two areas on the Medicine Wheel/Paintrock District were surveyed for northern goshawks using broadcast calling and walk-through surveys. One survey was conducted in the Cold Springs timber sale area to check the status of a goshawk nest site that was active in 1999; it was active in 2003 and had 3 fledglings. Alternate nest sites in this territory have not yet been located. The other survey was conducted along the Bucking Mule trail to locate a potentially active nest site. An adult goshawk was located flying in the area, but was not defensive of any area and no nest site could be located. Both of these areas will be revisited/resurveyed in FY2004.

Amphibians: No surveys were conducted for amphibians on the Tongue Ranger District. The breeding site for spotted frogs was monitored and breeding success was slightly above normal for the 2003 season. Monitoring of known breeding/reproductive sites was conducted on the Medicine Wheel/Paintrock District at the following locations: unnamed pond between Adelaide Lake and Mud Lake (wood frog tadpoles) and at the Buckley creek enclosure potholes (wood frog tadpoles and adults). Amphibian survey was conducted at wetland habitat near Adelaide Lake, and 2 abandoned beaver ponds in Porcupine Basin; no amphibians were found. All survey information was sent to the University of Wyoming for incorporation into the Wyoming Natural Diversity Database. Surveys in FY2004 will likely continue to improve distribution information.

Toads: Six toad domes were monitored in Shutts Flat. To date, no amphibians have used the domes. To date, there have been no confirmed sightings of toads on the Bighorn National Forest.

Water voles: During FY 2003, surveys for water voles on the Medicine Wheel/Paintrock District were not completed due to lack of field crew personnel (at the appropriate time) to perform the surveys. Surveys for water vole on the Powder River District during FY2003 were started at one location (Soldier Creek) but could not be completed due to lack of field crew

personnel; no water voles were found during the survey, with one trap night of effort. Surveys in FY2004 will likely continue to improve distribution information.

Black swift No surveys for black swift were conducted at Bucking Mule Falls, Shell Falls, or Brindle Falls during FY2003, due to lack of time and personnel.

Sightings of TES and other significant wildlife species were recorded on the Forest were reported to the Wyoming Observation System, which is maintained by Wyoming Game and Fish Department and to the Wyoming Natural Diversity Database, which is maintained by the University of Wyoming. These sightings are considered to be sensitive information and are not available to the general public. The recordings are mentioned here only to show that the Forest is tracking and recording all verified TES sightings. These will eventually be input into the Forest Service's new database for terrestrial wildlife, known as Fauna.

Wildlife Support was provided for the following environmental analyses:

- ◆ Story Prescribed Burn Project.
- ◆ Cramer/Big Horn Mountain Lodge land sale.
- ◆ Woodrock Timber Sale.
- ◆ Pussyfoot Timber Sale.
- ◆ Precommercial Thinning Project (Powder River).
- ◆ North Tongue Grazing AMP.
- ◆ Trapper, Dry Fork Medicine Lodge, Forks Grazing AMP.
- ◆ Swamp Timber Sale

MANAGEMENT INDICATOR SPECIES (MIS)

Biological Evaluations and Specialist Reports were completed for the Cramer/Big Horn Mtn Lodge sale, the Woodrock Timber Sale, Trapper, Dry Fork Medicine Lodge, Forks Allotment Management Plan revision, and Precommercial Thinning. HABCAP models and analysis, and field reviews of habitat conditions took place on these projects for MIS as well, as required by the Forest Plan, Amendment 15. The amendment resulted in six species being designated as MIS, including elk, red squirrel, red-breasted nuthatch, white-crowned sparrow, lark sparrow, and three-toed woodpecker. The amendment included monitoring requirements for MIS and also for certain TES species.

Big Game Species

Mule deer, elk, moose, and bighorn sheep populations are managed and monitored by Wyoming Game and Fish Department. Year 2002 Herd Unit reports (WYGF) were used to acquire the following information. **Numbers were not reported for mule deer, moose, and bighorn sheep as there is little change in population from previous years, and these are no longer considered MIS.**

Elk

Elk are common and are known to inhabit Bighorn NF primarily during spring thru fall, and may be seen at higher elevations onto the Forest during mild winters. WYGF manages populations

through three big game herd units: the North Bighorn, Medicine Lodge, and a minimal amount of South Bighorn herd unit (SE corner of Bighorn NF). Several hunt areas are identified within each herd unit. Population levels are largely managed by hunting but are also limited by the amount and quality of winter range available and the severity of the winters.

The population objective for the **North Bighorn Herd Unit** is 4,100 elk. The 2002 post-season population estimate is 4,845 elk. The 5-year population trend (1997-2001) for this herd has been at 4,150 elk. Post-season trend counts for the hunt areas in this herd unit indicate that herd populations appear to be stable to decreasing. Harvest strategies are to reduce elk populations to objective level and to address localized problems in some areas.

The population objective for the **Medicine Lodge Herd Unit** is for 3,000 animals. The 2002 post-season population estimate is 3,050 elk. The 5-year population trend (1997-2001) for this herd has been above objective level. Harvest strategies are to maintain the population at objective level.

South Bighorn Herd Unit (Hunt Area 34 covers SE portion of Bighorn NF) objective is for 2,900 elk. The post-season population estimate is at 5,574 elk (66% over objective post-season 2002). The 5-year (1997-2001) population estimate trend for this herd has been 6,415 elk. The population objective for the portion of 34 that is on the Forest is for 900 elk. Throughout much of the South Bighorn herd unit, harvest is strongly influenced by access to private lands, thus lack of hunter access and success is a significant problem. Harvest strategies for Hunt Area 34 will continue with increased quotas, cow/calf seasons, and longer seasons to attempt to reduce the herd to objective level.

No specific habitat monitoring for elk takes place on the Forest. Habitat requirements are assessed with each project analysis. The WYGF occasionally monitors winter range off the Forest to assess habitat conditions.

AVIAN AND RED SQUIRREL MIS POPULATIONS

The Forest began implementation of avian point counts to gather population information on the remaining MIS species (other than elk) described above. This monitoring is being conducted by the Rocky Mountain Bird Observatory in Brighton, CO, as this organization was also conducting statewide avian monitoring and similar monitoring in Colorado. The Forest also provided financial support to the statewide monitoring program. In total, this monitoring cost the Forest approximately \$25,000. Forestwide monitoring involves approximately 40 transects of 15 point counts each, stratified among four primary habitat groups including montane riparian, high elevation conifer, mid-elevation conifer, and sagebrush-grassland. These four habitats were most representative of the habitats frequently altered by the Forest. This monitoring will provide population trend monitoring for the four avian species and the red squirrel, though detections for lark sparrow and three-toed woodpecker may be less than desirable due to their limited distribution, the random process applied in selecting transects, and the limited number of transects per habitat type (10). Initial results indicate an abundance of white-crowned sparrow, red-breasted nuthatch, and red-squirrels, but fewer detections of three-toed woodpeckers and lark sparrows occurred. Trend will not be able to be established until approximately 5 years. Breeding Bird Surveys are conducted for two routes on the Forest, Bald Mt. and Crazy Woman, and provide some indications of trend, though sample size and other biases apply (Sauer et al. 2003). Population trends were positive for red-breasted nuthatches, lark sparrows, white-crowned sparrows, and three-toed woodpeckers (see following table). Sample size was poor for

three-toed woodpeckers; they were only detected on one route. Red squirrels are not tracked through this program.

Table 8. Population trends (%) for avian species from 2003 Breeding Bird Surveys on the Bighorn National Forest.

Species	Route	
	Bald Mountain	Crazy Woman
Red-breasted nuthatches	+2.50%	+2.30%
Lark sparrow	+0.17%	+0.70%
White-crowned sparrow	+5.00%	+1.29%
Three-toed woodpecker	+0.14%	

Monitoring Requirement—Peregrine Falcon Occupancy

No peregrine nesting activity was observed on the Tongue District during the 2003 field season.

Peregrine falcons were released on the west slope of Bighorn National Forest in 1993. Since that time, active eyries (nest sites) have been documented in Shell Canyon and Tensleep Canyon. The Wyoming Game and Fish Department (WGFD) monitors peregrine falcon nest sites statewide (typically by helicopter survey). However, the Bighorn National Forest is not surveyed every year. During FY 2003, WGFD was not able to survey Shell Canyon. However, the district biologist did a survey from the ground to monitor a previously known active (in 2002) aerie, but no peregrines or an active nest were located. In 2003, Wyoming Game and Fish Department conducted a preliminary survey in Tensleep Canyon during FY2003. An aerie was located outside the Forest boundary; however, no active aeries were located on Bighorn NF land within Tensleep Canyon.

Monitoring Requirement—Wildlife Habitat Diversity

In addition to the support to projects previously mentioned, the following activities also occurred in FY 2003.

Aspen: Previously established transects and photo points are used to monitor and allocate aspen use between domestic livestock and wildlife. Exclosures are constructed and maintained to encourage regeneration following treatments and to provide monitoring opportunities.

Field inspections and/or photo points were taken at the following aspen stands during the 2003 field season by wildlife personnel on the Medicine Wheel/Paintrock District: an aspen stand in the Lower Pasture in the Granite Allotment and two aspen stands in the Lower Shell Pasture of the Shell Creek Allotment. Other aspen stands were inspected/photos taken by District range specialists and are included in the Range section of this monitoring report.

During the 2003 field season, exclosures around aspen stands on the Medicine Wheel/Paintrock District at Shell Creek, Ruble Creek, Shell Canyon, Woodchuck Bench, and Toe of Cement were inspected, vegetation condition was documented, and maintenance was performed where necessary. These exclosures encompass approximately 42 acres.

All aspen exclosures on the Tongue District were maintained during 2003. The individual exclosures are listed below.

N. Tongue	2 exclosures	4 acres
Marcum Creek	1 exclosure	5 acres
P.K.	3 exclosures	10 acres
Sheeley cabin	1 exclosure	3 acres
Hay Creek	6 exclosures	22 acres
Dry Fork	2 exclosures	4 acres
Camp Creek	1 exclosure	1 acre.
Total		49 acres

In addition to the above, the “new” exclosure in Hay Creek was monitored. It appears that fencing alone is not sufficient to allow the aspen to restock this site, and prescribed burning was attempted to remove shade from competing vegetation and to promote suckering (sprouting) of aspen from the live roots remaining inside the exclosure. Monitoring indicated that burning is needed, but it was not conducted this season due to weather constraints.

Willow/Riparian: During the 2003 field season on the Medicine Wheel/Paintrock District, inspection and maintenance was performed as necessary on 12 willow/riparian exclosures (approximate total of 455 acres). Condition of willow/riparian vegetation within the 12 exclosures was also documented. Additionally, one new exclosure was constructed around willow habitat on Duncum Creek to show willow potential at the site without the influence of livestock grazing. During the 2003 field season, the following willow/riparian areas were monitored on the Medicine Wheel/Paintrock District: 1) photo points at Sheep Creek #1, #2, and #3 were taken prior to livestock entering pasture, 2) willow photo points and a line intercept transect on Granite Creek were monitored, just after livestock entered the pasture, 3) numerous other ongoing monitoring of willow-riparian utilization by wild ungulates and domestic livestock was conducted at various locations throughout the Medicine Wheel/Paintrock District by range management specialists, and that information is included in the Range Section of this monitoring report.

All of the riparian exclosures on the Tongue District were maintained this season. These exclosures protect 268 acres of riparian habitat and a total of six miles of fisheries streams. The affected streams are:

Lick Creek	1 exclosure	21 acres	0.5 mile of stream
Fool Creek	2 exclosures	17 acres	1 mile of stream
Sucker Creek	1 exclosure	13 acres	0.3 mile of stream
Ranger Creek	1 exclosure	27 acres	0.4 mile of stream
East Fork	1 exclosure	82 acres	1.1 mile of stream
Preacher Rock	1 exclosure	89 acres	0.7 mile of stream

Bull Creek	1 enclosure	3 acres	0.2 mile of stream
Little Willow	1 enclosure	15 acres	0.2 mile of stream
Hwy 14 bridge	1 enclosure	0.5 acre	0.01 mile of stream

All of the riparian exclosures on the Powder River District were maintained this season. These exclosures protect 5.5 acres of riparian habitat. The treated areas are:

Hunter Creek Pasture	1 enclosure	1/4 acre.
South Hospital Hill	1 enclosure	1/4 acre.
Hunter Mesa Riparian	1 enclosure	1/4 acre.
Hunter Mesa Cow	1 enclosure	1/2 acre.
Hunter Mesa Wildlife	1 enclosure	1/2 acre.
New Hondo Creek	1 enclosure	1/4 acre.
Grommund Creek	1 enclosure	3/4 acre, 300' of stream.
Dry Poison Creek	1 enclosure	2.5 acres, 1,000' of stream.
#3 east	1 riparian enclosure	16' x 16'.
#4 Hansen's spring	1 riparian enclosure	16' x 16'.
#1 Hansen Sawmill	1 riparian enclosure	16' x 16'.

Some of the above exclosures are designed to exclude big game animals, and some exclude cattle only. Monitoring has shown that annual maintenance is more cost effective than allowing the exclosures to deteriorate and then invest more work to bring them up to standard. It has also been shown that even one year of browsing inside an exclosure can set the vegetation back far enough to require several years of protection to recover.

Willows were not transplanted into empty cages inside the Fool Creek, Lick Creek, and Bull Creek exclosures again during FY 2003.

Routine monitoring and maintenance of fish structures as typically provided by the wildlife crew was not done during FY 2003. Specifically, the instream structures in Fool Creek, Bull Creek, Lake Creek, and Lick Creek (about 300 structures total) were not checked or maintained due to lack of funding at the District level.

Preliminary discussions with WYGF are moving toward cooperative efforts to monitor and manage browse use of willow. One willow monitoring transect was established on the Powder River District in FY 2003, with hopefully more occurring in 2004. Transects for willow and livestock/moose use in the North Tongue area were monitored by range personnel in FY 2003.

Wildfire/Prescribed Burning and Monitoring: Monitoring of past prescribed burns on the Tongue District did not take place during FY 2003 due to lack of personnel available. The specific burns to be monitored included Kerns, Tongue Canyon, and Dry Fork/Skull Ridge.

Monitoring of prescribed burns on Medicine Wheel/Paintrock District included establishing two photopoints and associated transects in the Upper Shell prescribed burn. This was done one growing season after the burn and is planned to be revisited during FY2006. Additionally, monitoring was conducted at Salt Creek and Pete's Hole proposed prescribed burn sites to establish existing condition prior to burning. Photopoints were taken at Pete's Hole. At Salt Creek, a photopoint and associated line intercept transect was established. These will be revisited one growing season after the burns are completed.

Prescribed burn projects accomplished during FY2003 that also benefited wildlife are listed under the Fire section of this monitoring report.

On the Tongue District, a prescribed burn in the Hay Creek #3 aspen enclosure was attempted and abandoned when it became obvious that the fire would not meet our objectives. This burn will be attempted again in 2004 if weather permits. Another prescribed burn was pursued in Tongue Canyon. This project was abandoned when field review illustrated that the previous prescribed burning had met objectives better than we thought; no further burning is needed at this time. Burning was conducted on several units of the Schuler Timber Sale in FY2003. These burns were designed primarily to remove slash in clearcuts to create sites for planting new trees. Wildlife concerns included retaining large woody debris in sufficient quantities to provide habitat for small rodents. This objective was fully met, and the burned units should serve as a showcase in terms of desired post-burn condition.

Plans were made to conduct a prescribed burn in the Little Horn canyon. The burning did not happen in the spring of FY2003, primarily for political reasons, but the area was burned beautifully by a wildfire in mid August of 2003. The objectives for that unit were fully met. A "buffer" has now been started between the cabins in the lower canyon the remaining burn units farther upstream. Plans are underway to continue with the prescribed burning in FY2004.

Other Habitat Projects: Evergreen trees were transplanted in October of 2002 (FY 2003). A total of 50 trees were planted in Prune Creek Campground. The work was accomplished using funds (KV) that were collected primarily from the sale of forest products such as Christmas tree permits and transplant permits. Monitoring of the previous four years work indicated over 99% survival rate, and FY 2003 will be the last time we do this type of work on the Tongue Ranger District. All campgrounds have now been restocked with replacement trees and the overall project was a success.

A target of 20 acres of aspen retention was accomplished. Areas treated for aspen retention were primarily within the Twin Nickel Timber Sale on the Tongue District.

Areas treated for conifer encroachment into meadows on the Tongue District were primarily near Burgess Junction and along Highway 14 at Marcum Creek. In addition, approximately two acres were treated on the Powder River District. One small area (2 acres) was treated for conifer encroachment (mechanical method) into wetland/riparian habitat on the Medicine Wheel/Paintrock District.

On the Tongue District, a total of 127 bluebird houses were monitored this year with the help of volunteers from the Sheridan chapter of the Audubon Society and Bob Tippie. Nesting success

was about average, and there are no concerns or indicators of a downward trend for this species. In addition, the results from the 2002 nesting study were tabulated and sent to all volunteers. Many of the boxes have been exposed to weather for up to 10 years now, and most have deteriorated to the point that repairs are not feasible. We will need to look for opportunities to have new boxes built and begin to replace boxes as needed. This year, 7 boxes required heavy repair or replacement, and this number is expected to increase in the near future.

A bluebird house project was also begun on the Powder River District, with a trail established along the Hazelton Peak Road.

The swallow condos at Burgess Ranger Station were monitored during the 2003 field season. All condominiums are being used, and no further work is required.

Nest boxes for kestrels were maintained and monitored again on the Tongue District. A total of 6 boxes are currently installed. Annually, we attempt to clean the boxes out and replace a layer of fresh wood chips. This year, no boxes were occupied by kestrels.

Inspection and maintenance of 3 upland exclosures (approximately 5 acres upland habitat) was conducted during the 2001 field season on the west side of the Forest. Vegetative condition and composition within exclosures was also documented.

Monitoring Requirement—Winter Range Carrying Capacity

The Wyoming Game and Fish Department conducts classification surveys and population trend counts on winter range (which includes some Bighorn NF land). This survey information provides information on winter range carrying capacity.

SOCIAL COMPONENTS

Heritage Resources

PROGRAM SUMMARY

Forest personnel completed fieldwork and received concurrence from State Historic Preservation Office (SHPO) on site eligibility and affects found during inventory for the renewal of the Tongue River and Devil Canyon Watersheds ten-year term grazing permits. Other support work included analysis for the forest plan revision, including a draft review of an ethnographic study and area analysis by 5th order watersheds; prescribe fire program, heritage resource inventory for travel management on the Powder River Ranger District, and five other small projects. Total acres of inventory accomplished were over 6,000 acres.

Public education for the year included two flint knapping demonstrations to grade schools, and three days of participation at the Wyoming Game and Fish Expo. Additionally, personnel conducted several talks that took place at the Burgess Junction Visitor Center. The programs include the Sibley Battle, flint knapping demonstration, and a prehistoric technology workshop.

IMPLEMENTATION MONITORING

Monitoring Requirement 1 – Professional Field Evaluation of Two Randomly Selected Projects (Forestwide)

Personnel examined two NEPA projects associated with the management of the Bighorn Medicine, National Historic Landmark.

Monitoring Requirement 2 – Sample Field Evaluation of Identified Cultural Resource Properties Requiring Protection (any Eligible or Unevaluated Site)

On the Tongue District, ten prehistoric heritage resource properties associated with grazing permit reissuance were evaluated for impacts. All nine sites were incurring impacts. The impacts to these sites are considered threatening to their eligible status and include impacts from grazing, wildlife, vandalism, and erosion. At present, mitigation plans are being designed to lessen the impacts. Implementation of mitigation measures is proposed to begin in 2004 and should be completed by 2008.

Additionally, three Heritage Resource properties on associated with the Bighorn Medicine Wheel were monitored. No impacts were noted.

EFFECTIVENESS MONITORING

Two goals are associated with effective forest plan monitoring: 1) identify appropriate resource management and 2) initiate actions to reduce deficiencies.

In 2003, the Forest continued its concerted effort in meeting the objective of goal #1. This was accomplished through the grazing permit renewal process, specifically, by the establishment of quantitative monitoring localities (5). On a programmatic level, analysis of heritage resources management is occurring by watersheds for forest plan revision. The data has reflected that appropriate integrated resource management is improving. For example, if present grazing standards are met, impacts to heritage resources are generally minimal.

The Forest continues to deal with deficiencies at a project specific level versus at the Forest level. This is not to say one level or the other is better, but the 1985 Forest Plan lacks any direction in this area. Historically, the Forest had little incentive to manage heritage resources at the Forest level. By default, deficiencies are only identified and dealt with at the project specific level, which may not be the level to analyze the deficiency nor cost effective.

However, the Forest has recognized the need to deal with heritage resources at a Forest level. Ongoing efforts continue to be more efficient through the use of Programmatic Agreements (PAs). Presently, the Forest and Region 2 is working on a master PA that will incorporate all past individual PAs (i.e., range, wild fire) within one document. The agreement will include standard operating procedures for several reoccurring programs of work, and will include exceptions of actions from 106 reviews

VALIDATION MONITORING

The 1985 Forest Plan goals and objectives are lacking in most areas. The laws that they were initially based upon have since been amended, and present forest plan direction is inadequate and/or inconsistent with the new amendments. For example, the 1985 Plan provides no direction for setting resource priorities for recreational needs, nor requirements of executive order 13007.

Also, monitoring requirements should be updated to include reporting the reduction in backlog of unevaluated sites on the Forest.

In essence, the 1985 Plan has no real “mileposts” to determine compliance with the variety of laws, regulations, and policies associated with heritage resource management, specifically, Sections 106 and 110 of the National Historic Preservation Act (NHPA).

Key elements that should be address in the Forest Plan monitoring section are clearly expressed in the NHPA and reiterated in FSM 2360. Examples of language found in the NHPA are:

Section 106

The head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register. The head of any such Federal agency shall afford the Advisory Council on Historic Preservation established under Title II of this Act a reasonable opportunity to comment with regard to such undertaking.

Section 110

a)(1) The heads of all Federal agencies shall assume responsibility for the preservation of historic properties which are owned or controlled by such agency.

(2) Each Federal agency shall establish (unless exempted pursuant to Section 214) of this Act, in consultation with the Secretary, a preservation program for the identification, evaluation, and nomination to the National Register of Historic Places, and protection of historic properties [balance program]. Such program shall ensure —

(iii) provide for the disposition of Native American cultural items from Federal or tribal land in a manner consistent with section 3(c) of the Native American Grave Protection and Repatriation Act (25 U.S.C. 3002(c); [NAGPRA]).

Guidelines, Park Service

The program should try to ensure that the agency's officials, employees, contractors, and other responsible parties have sufficient budgetary and personnel resources needed to identify, evaluate, nominate, manage, and use the historic properties under agency care or affected by agency actions.

To rectify the situation mileposts have been established to track compliancy with Section 110 of the NHPA. These milepost have been incorporated into the new Forest Plan, and will be the primary tool to track heritage resource compliance along with the two present elements noted above.

Table 9. Milepost define in new plan, Section 110 accomplishments.

Element	Measurement	Accomplishments		Comment/Total
		Past	2003	
NEPA projects monitored	Two projects yearly	N/A	Two	Both
Sites monitored	Yearly, as defined in PAs	N/A	13	Four sites No impact. Nine sites under mitigation associated with Tongue AMP

Element	Measurement	Accomplishments		Comment/Total
		Past	2003	
Acres Class III surveyed; Section 110	500 acres yearly	2,014	0	Firm target beginning in 2005/Total 2,014
Evaluate new sites	Varies, number of sites found during Class III inventory	13	0	13 out of 19 sites. Completed before new standards (NW-94-02)
Backlog of un-evaluated sites	50 sites over 15 years of new plan	3	0	Firm target beginning in 2005/3
Historic preservation plans completed 2002/ since 1985	10 over life of plan	2	2	2003 sites are works in progress/2
Sites nominated to the National Register Of Historic Places 2002/ since 1985	As appropriate	2	2	2003 sites are works in progress/2

EVALUATION AND CONCLUSIONS

The 2003 monitoring program results reflect that the Bighorn National Forest continues to have impacts to heritage resources by natural deterioration, grazing activities, vandalism, and wildlife activities (burrowing rodents). Additionally, although the Forest Plan states, “follow the laws” in the standard and guideline section, no mileposts were established to determine legal compliance. Analysis of how effective the direction in the forest plan is can only be accomplished by established mileposts. This methodology (see previous table) has been incorporated into the Draft Revised Forest Plan and will clearly show if the Forest’s program for compliance with federal laws, and development and implementation of an effective heritage resource program is adequate.

In conclusion, the 1985 Forest Plan is deficient for determining compliance with federal laws, as it lacks definable mileposts to measure and document if the Forest is meeting its program management objectives, as well as meeting federal laws, regulations, and Forest Service policies. The Revised Forest Plan will give specific direction and targets to insure a proactive program by 2005.

Lands and Special Uses

The Lands and Special Uses Program on the Forest consists of real estate and boundary management including land acquisition and adjustments, withdrawals, public access, and the administration of a wide variety of special use authorizations, including permits, leases, and easements.

The Forest administers approximately 500 authorizations, including 150 non-recreation uses such as communication sites, municipal and agricultural reservoirs, pipelines, power lines, a fish hatchery, roads, and a variety of miscellaneous uses. In addition, the Forest permits approximately 375 recreation uses, including outfitter/guiding operations, recreation residences, three organization camps, ten resorts, two ski areas, numerous group use and recreation events,

and a Forest-wide campground concession permit. With 265 summer home permits, the Bighorn has the most recreation residences in the Rocky Mountain Region.

In addition to the administration of existing permits, the Forest receives several new applications annually. Special uses staff reviewed and processed new authorizations for resorts, road easements, reservoir easements, and other uses. District staff reviewed and processed special-use permits for outfitter-guides, recreation residences, group and recreation events, and temporary non-recreation uses.

Projects in FY 2002 and ongoing into FY 2003 included the analysis of the Wyoming High Country Resort Master Development Plan, Tie Hack Reservoir Land Exchange proposal, meeting the Forest's landline target, and resolving various trespass cases, including the resolution of one encroachment under the Small Tracts Act. The Forest has also been working to identify and resolve public access issues when possible.

The Forest does not have a current capacity analysis on which to base the issuance of new outfitter-guide permits, therefore new commercial/for-profit permit proposals are denied based on the 36 CFR 251.54 Initial Screening Criteria. A Needs Assessment and Capacity Study is a priority for 2004.

Performance evaluations for outfitters and guides were accomplished for the first time in 2003 on the Medicine Wheel/Paintrock RD. Approximately 20% of recreation residences were inspected for compliance with the terms of their permit. Resort operating plans were put in place for 2 of the 3 resorts on the Medicine Wheel/Paintrock RD.

The Tongue Ranger District conducted Outfitter Guide (OG) inspections for four permittees during 2003. They were to remote base camp locations. One permittee was given a probationary rating for not complying with the terms and conditions of the permit relative to Wyoming Game and Fish regulations. Inspections were completed for 28 recreation residence permittees. To monitor for compliance, a total of six recreation event permits were inspected.

IMPLEMENTATION MONITORING

Monitoring Requirement – Ensure Compliance with Terms of Authorizations and Operating Plans

Inspection and compliance checks are performed to ensure compliance with permit requirements. Due to limited personnel and lack of funding, many permitted uses are not inspected often enough to ensure that the terms of the permit are being met. Staffing is such that only elements of health, safety, and environmental protection are administered to standard. Lack of communication site plans makes administration of the Forest's communication sites difficult. Forest Service directives state that updated Management Plans be prepared for all sites, but limited staffing has been prohibitive.

Monitoring Requirement – Effects on non-National Forest Land Management Practices on Adjacent or Intermingled National Forest System Lands or on Forest Goals and Objectives

Activities such as grazing, timber harvest, building and road construction, and recreation uses on adjoining and intermingled lands continue to increase. Public access to the Forest continues to be an issue. There are numerous unauthorized accesses across NF to private lands such as Camp

Comfort, French Creek Cow Camp area, Hazelton area, and Canyon Creek estates. Unauthorized road maintenance is occurring on these roads.

EFFECTIVENESS MONITORING

The Lands and Special Uses Program complies with the limited direction found in the Forest Plan. Forest Service manuals and handbooks provide principal management policy and procedures. Limited funds resulting in understaffing make it impossible to adequately administer all permits to these established standards.

The trespass cabin issue on South Paintrock Creek remains unresolved due to lack of priority. The RO minerals staff have made on-the-ground inspections.

VALIDATION MONITORING

An emphasis should be made to utilize a self-monitoring inspection system for all special uses, where a permittee reports his/her compliance with permit standards on an annual basis. This approach has been used successfully on other Forests and, with some initial effort, could work here.

Recreation

Lack of funding and personnel are the greatest challenges to providing a quality recreation program on the Bighorn National Forest. Recreation use continues to slowly increase, placing additional demands on resources already taxed to their limits. The use of snowmobiles and ATVs is becoming more popular, with a correspondingly greater potential for resource damage given the speed and power of these modern vehicles.

In spite of these developments, the fiscal realities facing the recreation program are making it increasingly difficult to respond to these factors. As a result, it appears that the long-term solution to this is that public will be asked to help through participation in volunteer programs and/or through a greater share of their resources by initiating new user fees (similar to the ATV registration law passed in 2001).

Forest visitation at our visitor centers and the Medicine Wheel decreased slightly from 2002 (-3.2%). Users of concessionaire-operated campgrounds increased by 3.2% compared to 2002 levels. Overall visitation as measured by traffic counters on major routes associated with the Forest remained roughly similar to 2002, increasing only 0.5%. Highway traffic counts supplied by Wyoming Department of Transportation continue to be a less-than-ideal indicator of Forest use. The Forest is establishing traffic counters on Forest roads to provide a better source of data in the future.

PARTNERSHIPS AND VOLUNTEERS

Recent emphasis has been made to highlight the efforts of partnerships and volunteers as a Forest monitoring item. Volunteer groups and individuals were used throughout the Forest to help perform a variety of recreation duties including trail maintenance, campground and facility maintenance, signing, patrols, visitor contacts, interpretation at visitor centers, horseback patrols, trash pick-up, cave clean-up, and grooming cross country ski trails. Some examples of how

volunteers and partnerships enhanced the Bighorn National Forest's recreation program are shown below:

- ◆ The Powder River Ranger District received over 5,000 hours of contributed volunteer time during FY 2003. Projects included trail maintenance, Leave No Trace sessions, water quality sampling, National Trails Day observance, removal of substandard wilderness bridges, campsite monitoring, and database cleanup.
- ◆ On the Tongue Ranger District, five volunteer hosts helped maintain campgrounds, picnic areas, trailheads and dispersed sites across the District. Several area high school AP classes performed trail maintenance on the Tongue River (1/8 mi) and Penrose Story (1.5 mi) trails and cleaned up trash inside the Tongue River cave. The Black Mountain Nordic Club of Sheridan performed trail maintenance on the Dead Horse Cross-Country Ski Trail at Sibley Lake.
- ◆ On the Medicine Wheel/Paintrock District, volunteers accomplished approximately 10 miles of light trail maintenance. Two volunteers stationed at Porcupine Ranger Station remain critical to monitoring dispersed recreation use. Two Student Conservation Association volunteers provided interpretation, education, public safety, visitor information at the Medicine Wheel National Historic Landmark.

IMPLEMENTATION MONITORING

Monitoring Requirement—Developed Recreation Use

The Forest experienced an overall 2.3% reduction in recreation visitation during 2003 in developed recreation sites such as campgrounds and day use areas.

Three interpretive sites were operated in 2003 in cooperation with the Rocky Mountain Nature Association. Visitor comments regarding the management of these facilities were highly complimentary.

- ◆ Shell Falls remains the most heavily visited site on the Bighorn National Forest, with approximately 342,000 visitors in 2003, a reduction of 2.3% from 2002. It continues to be the highest grossing Forest Service interpretive sales outlet in Region 2, grossing \$108,036 in 2003. This represents a small decrease in sales from 2002 due to fires and road closures in Yellowstone National Park.
- ◆ Burgess Junction had approximately 52,000 visitors in 2003, a reduction of approximately 10% from 2002. It continues to be the second highest grossing Forest Service interpretive sales outlet in Region 2, grossing \$105,365 in 2003.
- ◆ The Medicine Wheel National Historic Landmark had another successful season following the management guidelines set forth in the Medicine Wheel Historic Preservation Plan. 15,657 people visited the Medicine Wheel in 2003, an increase of 2% from 2002. This number includes 367 Native American Indians who conducted 123 ceremonies. Visitor comments show strong support of the current site management and the facility improvements made in 2002.

The 14-day stay limit continues to be a problem in the more popular developed campgrounds. Visitors are avoiding the stay limit by reserving a site for 13 or 14 days and then turning around and reserving it for another 13-14 days. To address this, the Forest made preparations in 2003 to scope a proposed revision of the current 14 day camping limit.

Monitoring Requirement—Developed Site Facility Condition

Operation of most developed recreation facilities continues under the terms of a special use permit reissued to Gallatin Canyon Campgrounds, a division of Canyon Enterprises, Inc., with offices in Bozeman, Montana in 2001. The concessionaire provides an acceptable level of campground operations and maintenance. Some rehabilitation and/or redesign is needed in order to meet resource and user desires is needed, and the Forest is developing a list of maintenance and repairs for campgrounds to be completed during 2004 by the concessionaire. Many of the existing vault toilets do not meet Regional SST (“Sweet Smelling Toilet”) standards.

Forest-funded developed recreation site improvement projects for FY2003 included:

- ◆ Leigh Creek RV dump station: Construction of a new water system, installation of new infrastructure and other miscellaneous work.
- ◆ Bald Mountain Campground (CG): Replacement of existing toilet with accessible concrete toilet.
- ◆ Boulder Park CG: Replacement of existing toilet with accessible concrete toilet.
- ◆ Ranger Creek CG: Replacement of existing toilet with accessible concrete toilet.
- ◆ Tie Flume CG: new toilet installation, new hand pumps, accessible picnic tables, tent pads, and bear-proof trash containers. Two new spurs were added and existing spurs were lengthened.
- ◆ Dead Swede CG: Fisheries improvement and streamside stabilization project.
- ◆ Sheep Mountain Lookout: Stabilization work.
- ◆ Hettinger Picnic ground: New well
- ◆ Cabin Creek and North Tongue Campgrounds; Battle Park, Hunter and Bucking Mule Falls trailheads: Well improvements
- ◆ Concrete well pads and new entrance signage was constructed/installed at numerous campgrounds, picnic areas and trailheads
- ◆ “Do not wash dishes” signs were installed at all campground, trailhead, and picnic ground hydrant and hand pump locations (approximately 80 locations).
- ◆ Fence reconstruction at Lost Creek CG

The design for the new Jaws trailhead in T56N, R91W, S18 is completed and a package has been submitted to contracting. This trailhead will serve the southern end of the Bucking Mule National Recreation Trail.

Twenty three recreation sites were surveyed for the deferred maintenance inventory. This amounted to 20% of the Forest’s sites and met the Forest’s requirement of surveying 100% of all recreation sites over a five-period.

Measurement factors (Meaningful Measures) such as Setting, Safety, Security, Responsiveness, and Condition of Facilities are not met on a routine basis with the present level of funding.

The design of Shell Falls continued in 2003 and is nearing completion of the design phase, with anticipated construction in September of 2004 pending acquisition of funding, and should continue for approximately 18 months. The design involves the construction of a new building, reconstruction of the existing parking area, renovation of the existing toilet facility, reconstruction of the interpretive amenities and reconstruction of the existing interpretive trail.

Monitoring Requirement—Dispersed Recreation Use and Experience Level

As noted in other monitoring reports, participation in dispersed motorized recreation activities continues to grow. Many miles of user-created trails occur through meadows and streams in designated “C” areas (motorized vehicles in these areas are allowed to travel off roads and trails.)

An agreement with the state of Wyoming to patrol the groomed snowmobile trail system on the Bighorn National Forest performed sufficiently in 2003. Forest Service employees patrol the trails and parking lots to check for compliance with the state’s snowmobile registration sticker program. Compliance with the sticker program has been excellent.

Motor vehicle traffic on native surface roads during the extended hunting seasons continues to have a significant impact on the resource due to the wet road conditions. Hunting seasons for elk now last from September 1 until mid-December (fifteen-week period or over 25% of the snow-free year). Use during the fall has the biggest impact on road drainage structures due to the presence alternating periods of the snowfall and warm weather.

Dispersed long-term trailer camping continues to be a major concern. In some instances trailers are left unattended for long periods of time and license plates are removed so ownership is difficult to determine. The number of desirable dispersed campsites is limited. Occupancy of these sites for “trailer storage” exacerbates the problem. The creation of new sites and continual use of those adjacent to sensitive riparian environments contributes to water quality problems. To address this, the Forest made preparations in 2003 to scope a proposed revision of the current 14-day camping limit.

Monitoring Requirement—Off-Road Vehicle Damage

Evidence of off-road and trail vehicle use is increasing. With the limited number of seasonals funded in the dispersed program, enforcement and contact with ORV users is minimal. Some ORV users refuse to follow regulations. The concept of “unrestricted motorized travel” in the “C” areas encourages new user-created roads. Motorized recreation-related offenses are the most frequently cited category of law enforcement offenses on the Bighorn National Forest, accounting for nearly 33% of the total violations issued in 2003, up from 24% of total violations issued in 2002. The forest plan revision will be addressing this problem through conversion of the remaining “C areas” to travel management areas which do not allow motorized travel off of system routes.

In light of the fact that the “C areas” will be addressed under plan revision, concurrent travel management planning to address motorized travel opportunities took place in 2003.

The Powder River Ranger District began a travel management analysis for the 88,000 acres “C area” in the Clear Creek and Crazy Woman drainages. The project is Clear/Crazy Designated Motorized Trail System, with a decision anticipated in 2004. The proposal would eliminate all cross country motorized travel except for snowmachine travel on snow.

As part of the Woodrock Timber Sale Environmental Impact Statement, the Tongue River continued its analysis of the “C” area in the vicinity of Woodrock and Duncan Lake. Similar to the Clear/Crazy proposal, under all alternatives in the Woodrock EIS, motorized travel would be limited to designated roads and trails with no cross country travel allowed.

Monitoring Requirement—Dispersed Campsite Condition

Campsite numbers and use of dispersed campsites continues to increase based on field observations.

As part of the Woodrock Timber Sale proposal, dispersed campsites along Sucker Creek and the South Tongue River would be limited to designated sites in order to maintain riparian area ground cover in riparian areas. Other dispersed camping would be limited to areas more than 100 feet from water. The timber sale and vegetation treatments proposed would create new dispersed site camping opportunities in the area of Duncan Lake and elsewhere.

The Powder River Ranger District continued the dispersed campsite inventory begun in 2002. Areas concentrated on were in the proposed Clear/Crazy Designated Motorized Trail System. Adequate coverage of the project was completed during 2003. Mapping work has not been completed to date. Observations by the seasonal point to the incredible development at some of the heavily used dispersed sites. Development includes outhouses, log structures, graveling of use areas by visitors and fire rings large enough to occupy an area the size of a compact car.

Due to funding constraints no dispersed campsite condition monitoring was done on the Medicine Wheel/Paintrock district in 2003.

Monitoring Requirement—Trail Construction and Reconstruction

Due to a lack of funding, the Forest did not employ a trail crew in 2003, nor was it able to conduct any trail condition surveys during 2003. As mentioned earlier, volunteers accomplished a moderate amount of light trail maintenance on each of the Districts and remain a critical asset to addressing the issue of continued trail deterioration on the Forest.

It is obvious that in order to meet trail challenges in FY 2003 and beyond, the Forest will need an adequate level of permanent staffing to train and work with volunteer groups.

Critical maintenance needs are increasing yearly. Improper trail locations (riparian areas, fall line, and erodible soils) are a major problem. When heavy use occurs in conjunction with improperly located trails, rapid trail deterioration occurs. Motorized trail travel on the Bighorn National Forest is increasing, and the associated trails are rapidly deteriorating. Trail erosion and resulting resource degradation are at unacceptable levels.

The Forest continues to develop a “Forest Trails Strategy” to prioritize trail construction and maintenance needs. This plan will help identify, emphasize, and focus on critical trail issues.

The Forest continues to cooperate with the state of Wyoming to help make the Off-Road Vehicles program a success and hopes this will result in additional dollars coming to Forest to allow for both maintenance and improvement of motorized routes.

Deterioration of the Forest trail system bridges continues and is at a critical stage with several nonstandard bridges collapsing in recent years (discussed in the FY96 Trail and Trail Bridge Accomplishment Report). Due to lack of CMTL funds, the Forest did not complete any trail bridge inspections in FY 2003. As a result, only 9 trail bridges have been inspected in the past 2 years; therefore, inspections of the remaining trail bridges are due within the next 2 years.

Monitoring Addition—Law Enforcement

2003 continued a trend of increased off-highway vehicle-related law enforcement incidents compared to recent years. At least half of all law enforcement time was spent dealing with OHV issues (e.g., education efforts or other public outreach, enforcement activities).

The number of motorized vehicle-related law enforcement offenses (Incident Reports, Warning Notices, Violation Notices) increased by more than 54% in 2003, compared to 2002. It should be noted that the number of offense actions by law enforcement personnel is primarily a function of the number of field personnel, so a more meaningful statistic is the share of OHV-related offenses compared to total offenses. OHV offenses as a percent of total offenses increased from 24% in 2002 to 33% in 2003.

The Powder River Ranger District has one trespass cabin that is masquerading as a mining claim. Regional Office Minerals Specialists have reviewed on the ground and need to complete a file review prior to action being taken on this issue.

VALIDATION MONITORING

Continued monitoring confirms views expressed in earlier monitoring reports. For clarity/understanding and readability the 2000 “Validation Monitoring” section is repeated.

“As the Forest moves forward with new planning efforts, some of the initial flaws in the current plan are being addressed. Previous concerns over use of Recreation Opportunity Spectrum (ROS) guidelines for management areas have been adjusted. Specifically, the building of roads in areas set aside to maintain Semi-Primitive Non-motorized experiences will be the exception in future planning. Changes will be available for public review in the upcoming Forest Plan Revision.”

Wilderness

PROGRAM SUMMARY

Four seasonal Wilderness Rangers were hired for the field season of 2003 maintaining the same level of seasonal staffing since 1994. Wilderness visitation this year was approximately 10% lower than that recorded in 2002. The lower visitation numbers are not attributable to the weather but may be due in part to the downturn in the national economic situation and road construction on U.S. 16 west of Buffalo, WY. (55,000 Recreation Visitor Days).

Monitoring Requirement – Condition of Use Areas

No monitoring for campsite conditions conducted in 2003. Next planned monitoring is in 2005.

Monitoring Requirement – Amount and Distribution of Wilderness Use

Recreation Visitor Days estimated at 55,000. The estimate of RVDs is based on required registration. Although visitation has shown a drop the last two summers, the trend line in Figure 5 shows growth a little less than 1% per year. Due to the ease of access to Cloud Peak Wilderness trailheads from US 16 over 80% of the visitors enter the wilderness from the south trailheads (Figure 6).

EFFECTIVENESS MONITORING

The campsite monitoring (conducted every 5 years) for amount of bare ground appears to be adequate to establish the trend in campsite conditions. The encounter monitoring and use numbers also appear to be effective monitoring techniques. Monitoring for other standards and guidelines in the Cloud Peak Wilderness indicate there are some areas at or beyond the levels set by the guidelines. during forest plan revision reporting on the monitoring of other standards and guidelines such as campsite density by lake and encounters needs to be considered.

Figure 5. Wilderness use figures for the Cloud Peak Wilderness, Bighorn National Forest.

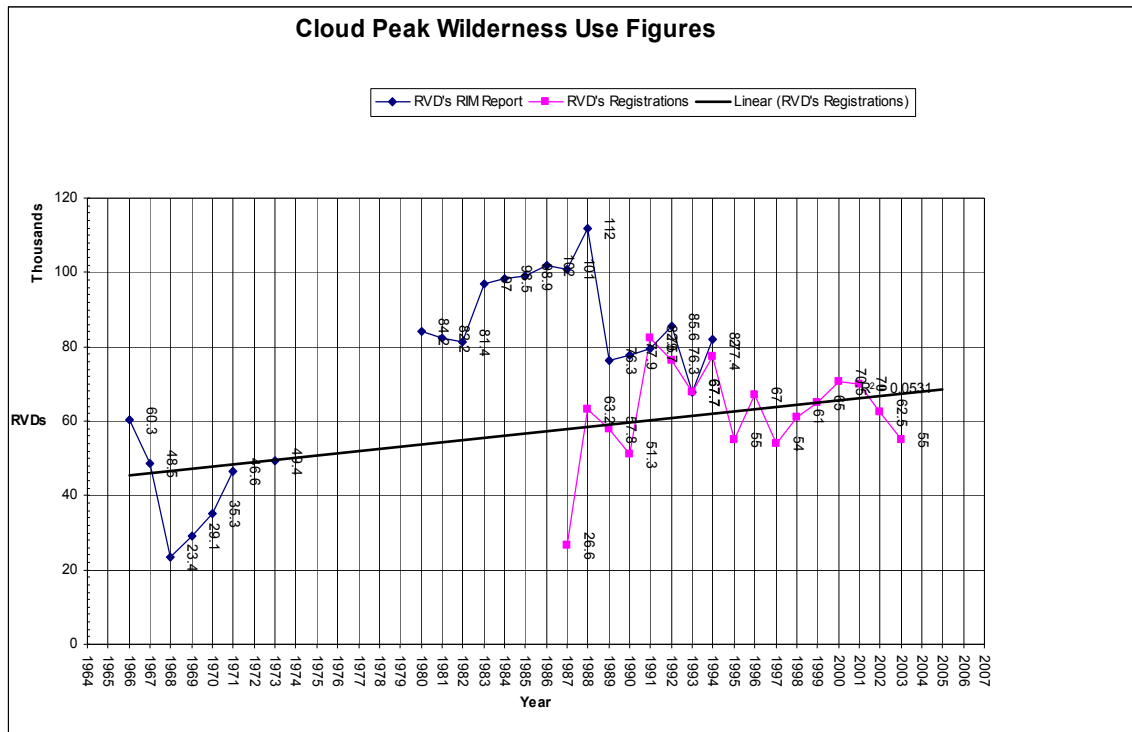
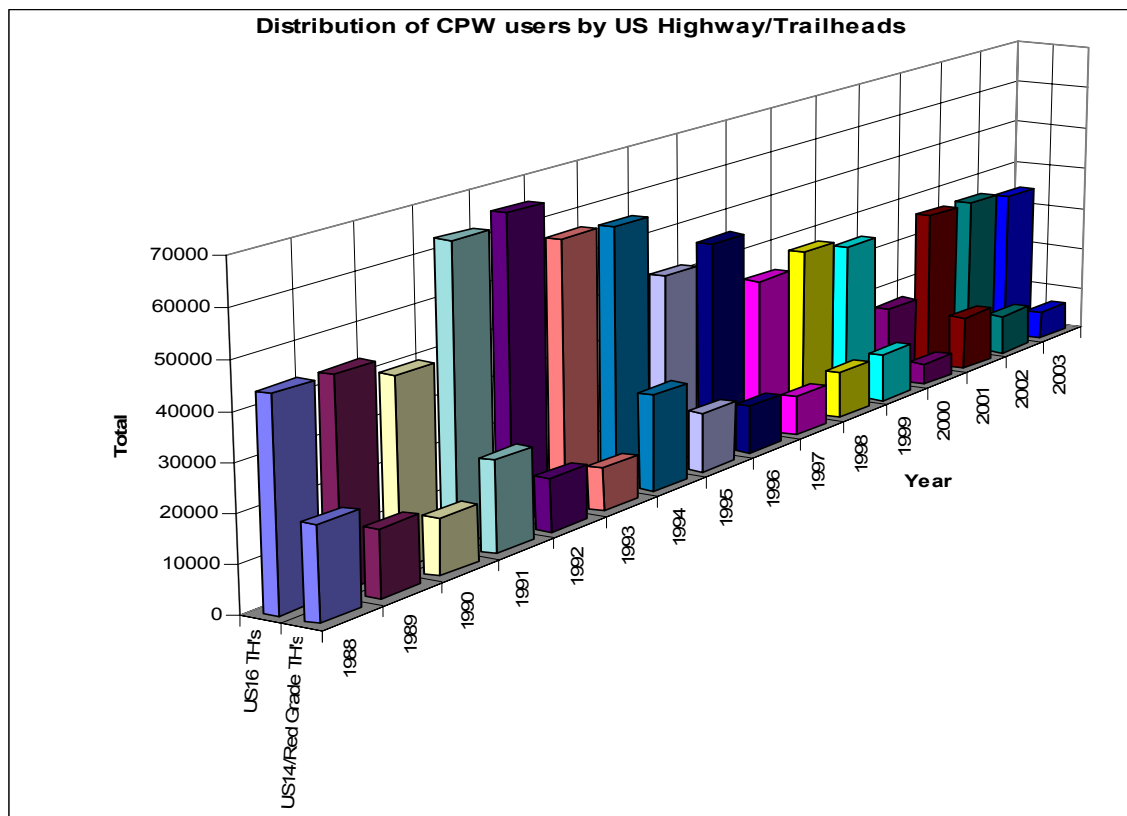


Figure 6. Distribution of Cloud Peak Wilderness users by highway and trailhead.



VALIDATION MONITORING

New standards and guidelines established by the Forest Plan Amendment (1998) have been implemented and more effectively show use and resource impact trends.

PHYSICAL COMPONENTS

AIR QUALITY

Cloud Peak Wilderness is a Class II airshed subject to protection under the Clean Air Act. Air pollution such as particulate matter, acid rain or other volatile organic pollutants could impact the panoramic views of the snow covered peaks within the Cloud Peak Wilderness. Sources outside the Cloud Peak Wilderness such as coalbed methane development east of the Forest in the Powder River Basin may pose larger threats in the future.

Monitoring Requirement—Air Quality

Currently the Wyoming Department of Environmental Quality contracts the operation of an IMPROVE station on Hunter Mesa 15 miles west of Buffalo, WY. In 2003 a long term permit was issued to the state for this station. Pictures from the monitoring station are available at www.wyvisnet.com.

Long-term lake sampling in compliance with the 1992 Bighorn National Forest Air Quality Monitoring Plan continued during 2003. The two Cloud Peak Wilderness lakes, Florence and Emerald, were sampled the required 3 times during the summer. Results from the Rocky Mountain Research Station are on file at the Supervisor's Office in Sheridan, WY.

RECOMMENDATIONS

The following recommendations have been made by individual specialists and/or the staff officer for that resource. The disposition column indicates the Forest Supervisor's planned action on whether to adopt the recommendation, defer it for some future time, or consider otherwise as described. Although every effort will be made to implement the adopted recommendations, some may not be accomplished due to changing future priorities.

Recommendation		Disposition	Track ¹¹
Facilities			
1.	Emphasize maintaining the portions of existing infrastructure needed for long term Forest management.	We will do this.	Yes
2.	Shift maintenance responsibilities to permittees and other users where appropriate.	We will do this.	Yes

Forest Vegetation			
1.	On the Forest, there is a need to write silvicultural prescriptions for non traditional vegetation management projects, including prescribed burning, special uses, and habitat improvement projects.	This is a requirement in the silvicultural handbook, FSH 2409.26, and it is the Forest's policy to follow that direction.	
2.	Update silviculture standards and guidelines to those previously listed in the Regional Guide for regeneration, size of created openings, size of uncut areas between created openings, when a created opening will no longer be considered an opening, guidelines that provide direction for the use of landscape level management, and guidance for applying silviculture systems to the landscape.	The Regional Guide has been discontinued. The silvicultural standards and guidelines will be updated in the Revised Forest Plan.	Yes

¹¹ This item will continue to be tracked in the next annual monitoring report.

3.	Review the projected mortality volume estimates from the 1985 Forest Plan. Current output is 187% of projected amount. A determination should be made to see if by exceeding this output we are doing so at the detriment of other resource objectives, or if the projections were inaccurate.	This is being done currently through the effects analysis in forest plan revision.	Yes
4.	Review standards and guidelines and document forestwide interpretation so they can be applied consistently and in consort with objectives and outputs adjusted accordingly.	This is being done through forest plan revision. We will not do this for the 1985 plan which is in the 18 th year of implementation.	Yes
Lands and Special Uses			
1.	Develop a self-monitoring inspection system for all special uses.	We intend on start implementing this in FY 2005.	Yes
Heritage Resources			
1.	Amend the 1985 Forest Plan to address changes necessary in the management of the heritage resource. Include more specific statements in the “General Direction” and “Standards and Guidelines” sections of the Plan relating to existing laws and procedures. The Forest Plan should reflect a 1988 Amendment to the Archaeological Resource Protection Act, Section 14(b) that requires the preparation of a schedule for surveying lands that are likely to contain the most scientifically valuable archaeological resources.	This is being addressed in forest plan revision. The existing and revised forest plans include, by reference, all applicable laws. We will manage the Bighorn National Forest in accordance with those laws. (This recommendation was originally made in the 2002 monitoring report, and the Draft Revised Plan was updated to achieve this recommendation.)	Yes
2.	Ensure that aerial spraying to control pests and noxious weeds is conducted with protective measures in areas containing petroglyphs and pictographs, or in un-inventoried areas containing rock outcrops, cliff faces, or rock overhangs. Recent advances in analytical techniques allow for the dating of petroglyphs and pictographs through sensitive chemical ratios.	A forestwide guideline to this effect was supposed to be added to the draft Revised Forest Plan, but was overlooked. A guideline that specifies that site-specific NEPA will be conducted, and will consider these resources, will be proposed for the final Revised Plan.	Yes

Heritage Resources, cont.			
3.	Incorporate a paleontological resource management program.	The draft Revised Forest Plan goals, objectives, standards, and guidelines include direction for paleontological resources. The Bighorn National Forest will continue to manage this resource for protection for the foreseeable future, rather than engage in an active management program.	Yes
4.	Enter into an agreement with the Wyoming State Historic Preservation Office that deals with the acceptance of impacts to all but the best examples of resource types (e.g., the best tie-hack cabins; the best teepee ring sites). The end result of the agreement would be a reduction in costs.	There is interagency work being done on this potential Memorandum of Understanding (MOU).	Yes
5.	Amend the 1985 Forest Plan or enter in agreements with Indian tribes, defining how the Forest will consult with tribes in accordance with implementation of the new regulation, 36 CFR 800.	The Bighorn National Forest has, and will continue to, engage in active consultation with Indian tribes. The draft Revised Forest Plan included additional direction on this topic (as compared to the 1985 Plan).	Yes
6.	Incorporate direction to cover all pertinent laws, such as Native American Graves and Repatriation Act, and Preservation of Historical and Archeological Data, as well as other federal direction that carries the weight of law, such as Executive Order 13007 (the 1985 Forest Plan emphasizes the management of Heritage Resources in relationship to Section 106, of the National Historic Preservation Act).	The Bighorn National Forest has, and will continue to, follow the National Historic Preservation Act. The draft Revised Forest Plan includes additional direction compared to the 1985 Forest Plan on this topic, as noted earlier in this monitoring report.	Yes
Insects and Disease			
1.	Change the monitoring requirement currently in the 1985 Forest Plan to reflect surveys every three years and spot surveys as needed, rather than the 800,000 acres each year.	The recommendation for monitoring requirement is included in the Draft Revised Forest Plan.	Yes

Recreation			
1.	Adjust and clarify both capacity figures and ROS guidelines in the Forest Plan.	The Forest is scheduling a capacity study for FY 2004. ROS guidelines are being addressed in the draft Revised Forest Plan.	Yes
2.	Initiate an intensive education and law enforcement program of off-road vehicle use and dispersed camping. Consider the elimination of off-road vehicle areas (“C” areas on our Forest maps).	Education and law enforcement have been ongoing and will continue to be done. The draft Revised Forest Plan includes direction for eliminating “C” areas. Travel planning on the Powder River Ranger District is being conducted to continue providing for motorized recreation in one of the affected “C” areas.	Yes
3.	Develop strategies for collecting reliable recreation use statistics and in defining recreation resource assets.	Project prioritization will be set annually through project work planning which is based on multiple resource needs and resource availability.	Yes
4.	Apply land management prescriptions to larger blocks of land in future planning.	This recommendation has been adopted in the draft Revised Forest Plan.	Yes
Soil and Water			
1.	Increase emphasis on monitoring of special use permits related to water conveyance systems, septic systems, and instream flows.	This has been done in the past and will continue to be done. The degree that this work is increased will depend upon annual project prioritization and work planning, which is based on multiple resource needs and resource availability.	Yes
Wildlife			
1.	For habitat improvement projects, focus priorities on achieving landscape scale improvements in big game winter range, aspen, or riparian areas.	This has been done in the recent past with prescribed burns such as the Little Horn and other efforts, and will continue.	No

Wildlife, cont.			
2.	<p>Achieve greater diversity in stand structure in conifer stands:</p> <ul style="list-style-type: none"> ◆ Particularly pole sized lodgepole pine stands. ◆ Use commercial timber harvest in suitable timber. 	<p>This has been difficult to implement due to the caution required in using prescribed fire in these stands, and due to commercial needs focus on sawtimber. Individual projects seek to improve diversity where possible</p>	No
3.	<p>Take advantage of opportunities for prescribed burns, aspen and riparian improvement projects; utilize partnership opportunities, such as RMEF or others.</p>	<p>The Forest has begun to re-engage partners to increase the tools and funding available for making effective treatments.</p>	No
4.	<p>Close roads in areas where road densities and system exceed Forest Plan goals to allow improved wildlife use of an area. Both seasonal and permanent road closures should be considered.</p>	<p>This recommendation will be considered on a site-specific project basis. This is being considered in projects such as the Clear Crazy Designated Motorized Trail analysis.</p>	No
6.	<p>Conduct owl surveys and additional cave surveys (bats) to improve information on these sensitive species.</p>	<p>This has been done in the past and will continue to be done.</p>	No
7.	<p>Need to collect data/information for invertebrate and mollusk species on Bighorn. Information needed includes: identification of species present; conservation priority; and, monitoring need/methodology.</p>	<p>This will be done as part of larger species viability/conservation efforts, and prioritized accordingly.</p>	Yes
8.	<p>Inventory for old growth conifer to ascertain the current amount and/or the amount needed in the future.</p>	<p>This has been done in the past. This was done in fiscal year 2003 and will be done in the future. A contract for inventorying old growth was awarded in 2003, with the inventory to occur in 2004 in the Tensleep watershed.</p>	No
9.	<p>Continue to refine existing avian monitoring for MIS species and others.</p>	<p>This was done in fiscal year 2003 and will be done in the future.</p>	No

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