

SHOSHONE NATIONAL FOREST

DRAFT

FOREST PLAN COMPREHENSIVE EVALUATION REPORT

VERSION 1.1

SEPTEMBER 2005

September 15, 2005

Version 1.0 of this document was released in May 2005. We received input from the public and government cooperators on information that they thought should be added, changed, or corrected in version 1.0. This version, 1.1, has been edited to address some of that input.

Three main areas still need work.

- The socioeconomic section needs to be rewritten. Many of the public's concerns are not addressed in this version. We are exploring what method will be used to complete a new write-up for this section.
- The wildlife section needs to be rewritten. The write-up in this version focuses on the current Forest Plan; it needs to be changed to reflect direction from the new planning regulations.
- There were a number of concerns about the performance measures in this report. We need to develop a new set of measures that are tied more closely to what will be in the revised forest plan.

Over the next several months, we'll be working on the socioeconomic, wildlife, and performance measures, as well as other sections that need to be addressed. New versions of this report will be released periodically.

Thank you for your patience,
The planning team

Planning Staff

draft

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Introduction

This report evaluates the current social, economic, and ecological conditions and trends as they relate to implementing the 1986 Shoshone National Forest Land and Resource Management Plan (Forest Plan). Forest staff are beginning the process of revising the 1986 Forest Plan. New planning regulations that guide the revision process were released in January 2005. Those regulations direct that as part of the initial stages of revision, a comprehensive evaluation report be produced that evaluates the current social, economic, and ecological conditions and trends that contribute to sustainability. In preparation for revision, the Shoshone planning team began working on a similar type of report prior to December 2004. In order to continue our process, we have adjusted that report to fulfill the requirements of the new planning rule.

Document organization

This report starts with a description of the setting for the Shoshone National Forest. This description provides background on the history, environment, and resources of the Forest.

Following the setting discussion there is a general discussion on management direction for the Forest. This discussion presents a landscape level view of the Forest and focuses on broad elements of Forest Plan management direction.

The main body of the report includes discussions for various resource areas. The information contained in this completed report will provide the starting point for discussions on revision of the Forest Plan. This report will be supplemented and the recommendations will change as we work with the public during the revision process.

Existing Forest Plan management direction. Each resource discussion begins with a summary of direction from the 1986 Forest Plan. This discussion provides more details than in the landscape level section. Though not inclusive of all Forest Plan direction, the summary provides the highlights for the various resource areas. This direction is a mix of desired conditions and objectives. Some of the direction is broken down by management emphasis area.

The concepts of desired conditions and objectives have evolved over the years, so it is not possible to directly translate 1986 Plan direction into language that will be used in the revised forest plan. The focus of any evaluation of existing plan direction should be on the intent of that direction and not directly on the specific words used.

Activity and condition trends. Following the management direction summary are discussions on conditions and trends that relate to Forest Plan direction. The discussions provide context for what has happened to the resource during Forest Plan implementation and are based on available information, including monitoring information, surveys, assessments, analyses, and other studies.

Performance measures, listed at the beginning of each section, are used to determine what progress has been made toward meeting Forest Plan direction.

The concept of performance measures is introduced here because it will be a key element in measuring how well the revised plan meets our expectations. These measures need to be evaluated to determine if they are appropriate in determining desired outcomes. This will also be useful in comparing plan options and focusing the public discussion on what should be in the final plan.

Projections if existing Forest Plan direction continues. The next section projects what is likely to happen if implementation of the current Forest Plan continues. The projections are based on the trends that have occurred over the last 15 years and the knowledge of our resource professionals of known and expected changes in budgets, laws, and regulations.

Need for change in Forest Plan direction. The final section for each resource is identification of changes in Forest Plan direction that Forest personnel thought should be considered during the revision process. The

need for change focuses on two aspects of the management direction. In the first case, the intent of the direction is appropriate, but the specific application of that direction is not having the intended outcome. In this case, the need for change is to find a different way to accomplish the intended outcome. The second type of need for change is where a different outcome is desired than exists in the existing Forest Plan. In this circumstance, the need is for a different desired condition.

Need for change for all resources

Specific needs for each resource are identified within each resource section. Some, more overall needs encompass a number of program areas or forest management in general and are addressed here.

The desired conditions and objectives in the revised forest plan need to incorporate/address the resource concerns that were not present or fully realized when the Plan was signed in 1986. Examples of these are:

- Increasing spread of invasive species
- Increasing off-highway vehicle use
- Increasing fuels loads and large wildfires
- Increasing home development in the forest/urban interface

In reexamining the concerns on the Forest, through the revision process these new concerns will be incorporated into the context of all concerns, so that management priorities and direction for the Forest can be defined.

The revised plan's desired conditions and objectives need to consider the availability of budget and personnel resources, so that expectations are not greater than what can be implemented.

Another area that will require change is the monitoring section. The monitoring plan will be directed toward addressing the most important resource concerns on the Forest. These concerns will be identified throughout the planning process and are likely to require a change in the current monitoring items and protocols. Staffs have identified a number of areas that need to be considered in this process.

Other things that persons may want to see changed include increased budgets, more personnel, or specific on-the-ground activities. These items fall under the areas of budget and management and are not part of Forest Plan direction. Needs for change for these items are not included here, though they may be discussed in relationship to some need for change in Forest Plan direction. Revision of the Forest Plan is not the correct avenue for addressing these types of needs.

Forest setting

The Shoshone National Forest is in the northern Rocky Mountains in northwest Wyoming. Part of the Forest was set aside in 1891 as part of the Yellowstone Timberland Reserve, making the Shoshone the first national forest in the United States. With Yellowstone National Park on its western border, the Shoshone extends more than 180 miles from the Montana state line to South Pass near Lander. It is bordered by the Custer and Gallatin National Forests on the north and by Yellowstone National Park and the Bridger-Teton National Forest on the west. The Forest is set within the lee of the massive Absaroka, Beartooth, and Wind River Mountains.

The Forest consists of 2.4 million acres in Park, Fremont, Hot Springs, Sublette, and Teton Counties. The Shoshone National Forest is a part of the Greater Yellowstone Area, which consists of the Beaverhead, Bridger-Teton, Caribou-Targhee, Custer, and Gallatin National Forests and Grand Teton and Yellowstone National Parks.

The Shoshone offers outstanding wilderness opportunities with over half the Forest (1.4 million acres) designated as wilderness (Washakie, North Absaroka, Absaroka-Beartooth, Popo Agie, and the Fitzpatrick Wilderness Areas).

The terrain varies widely from sagebrush flats to rugged mountains because the Forest is situated on the western edge of the Great Plains and the eastern side of the continental divide. Elevations on the Shoshone range from 4,600 feet at the mouth of the spectacular Clarks Fork Canyon to 13,804 feet on Gannett Peak, Wyoming's highest point. The higher mountains are snow-clad most of the year with immense areas of exposed rock interspersed with meadows and forests. The Forest provides a diverse landscape—from lush grasslands to alpine meadows, from crystal-clear lakes to glacial carved valleys, from rolling hills to sheer mountain walls.

The Forest is the eastern access to Yellowstone National Park. There are several recreation trails and scenic drives including the Beartooth Loop National Recreation Trail, the Beartooth scenic byway, Wyoming Centennial Byway, Buffalo Bill Scenic Highway, and the Chief Joseph Scenic Highway.

Most of the Forest is within the upper Missouri River Basin, subdivided by the Wind/Big Horn, and Clarks Fork river basins. The southern tip of the Forest is in the Sweetwater drainage, which flows into the Platte River system. Principle rivers within the Forest boundary are the Clarks Fork of the Yellowstone River, North and South Fork of the Shoshone River, and the Greybull, Wind/Big Horn, and Popo Agie Rivers.

As part of the Yellowstone ecosystem, the Shoshone provides habitat for and supports populations of many wildlife species, including grizzly bear, wolf, elk, deer, moose, bald eagles, and Yellowstone cutthroat trout.

The annual precipitation varies with topography and elevation, ranging from 15 to 70 inches. The higher elevations receive from 30 to 40 percent of their annual precipitation during the winter in the form of snow, roughly 40 percent as rain and snow in the spring, and 20 to 30 percent as rain in summer and fall.

The Shoshone National Forest is named for the Shoshoni. The Arapahoe, Blackfeet, Comanche, Crow, Nez Perce, Northern Cheyenne, and Sioux tribes also hunted, traveled, traded, and fought in the area. Mountain men John Colter and Jim Bridger were early visitors as well. The ghost town of Kirwin, an early-day mining town, is a window to the past, recalling one of the colorful eras in Wyoming's history. The remains of tie hack flumes and cabins on the southern end of the Forest are reminders of another era during which millions of railroad ties were produced. The Civilian Conservation Corps was active in the 1930s in portions of the Forest, constructing all-purpose roads that have become Forest arterials.

Compared to the 150,000+ domestic animals that grazed on the Forest at the beginning of the 20th century, today's levels of about 27,000 cattle, sheep, and horses are comparatively low.

Multi-generations of families, as well as those recently arrived, have strong ties to this area through tourism, business, recreation, and other resource use activities. Today, people's connections to the Forest are through activities and service-oriented livelihoods such as scenic and wildlife viewing, wilderness trekking, camping, hunting, fishing, snowmobiling, traveling to adjacent national parks, dude ranching, historic lodging, and many other recreation activities. The scenery, wildlife, and the land itself create a distinct and direct tie to people's sense of place.

The character of the Shoshone's landscape has changed little over the last 100 or so years. It has remained in a rugged, pristine, primitive state, especially when compared to other western national forests.

Landscape Management

This section displays management variations across the Forest. Figure 1 provides a display of the management direction across the Forest. The general themes represent wilderness, non-motorized recreation, motorized recreation, and managed lands. Differences and similarities between activities can occur in these broad categories. The differences are addressed in the management direction sections included for each resource in the main body of this document. The discussion is intended to provide a broad

description of management of the Forest and it does not account for the numerous variations that occur within each area.

The map shows four different categories of management, and illustrates that the mix of management themes varies in the different areas across the Forest.

Special areas. This area includes designated wilderness areas, proposed and designated research natural areas, the Clarks Fork Wild and Scenic River, the Dunoir Special management area, and the High Lakes Wilderness Study area. Normally there are no vegetative management activities and natural processes are dominant. There is also generally no motorized activity, with the exception that some areas allow snowmobile access.

Non-motorized recreation. The primary emphasis for this area is recreation. Motorized access is generally prohibited. Some vegetative treatment may occur for other resource objectives.

Motorized recreation. The primary emphasis for this area is recreation. Motorized access is permitted and often encouraged. Some areas emphasize access suitable for passenger cars while other areas emphasize more of a backcountry experience. Vegetative treatment may occur for other resource objectives.

Managed lands. Various vegetative treatments and other activities commonly occur on these lands. The treatments are designed to emphasize different resources in different areas. Some of the lands are primarily managed for wildlife and big game winter range while other areas are managed for wood fiber production. Generally, motorized access is allowed in these areas, though there may be seasonal closures for some wildlife areas. The areas are also available for recreation.

Geographic areas

Geographic areas are used in forest planning to link a forest plan to management at a landscape scale and provide a tool for better communication. The areas shown in Figure 1 are areas that Forest users are tied to socially and economically, and may or may not be used for analysis purposes. The eight geographic areas were identified using the boundaries of 4th order watersheds, ecological units, and discrete blocks of national forest. The Beartooth and Clarks Fork areas were divided along an ecological unit boundary. The North Fork, South Fork, and Greybull areas were divided along watershed boundaries. The Wind River, Fitzpatrick, and Lander areas were divided along boundaries of discrete blocks of national forest.

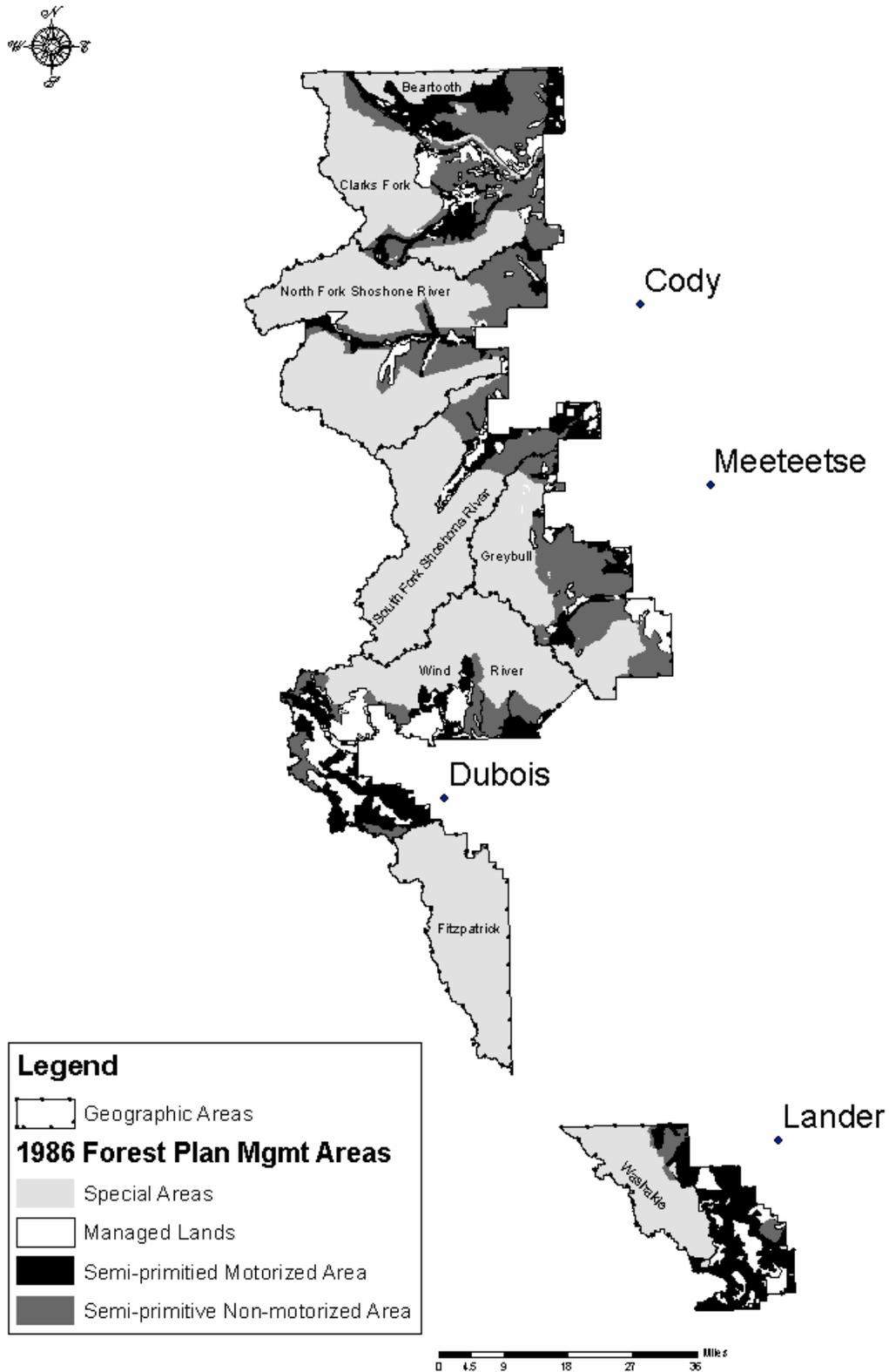
All geographic areas of the Forest have some special areas.

All geographic areas of the Forest, except the Fitzpatrick, have some portion of managed lands. Most of the geographic areas have less than 10 percent managed lands, except the Washakie and Wind River areas, where 13 percent and 21 percent of the geographic area consists of the managed land category.

Similarly, all geographic areas of the Forest have some form of motorized recreation category, except the Fitzpatrick. These areas are generally less than 10 percent of the acres in a geographic area. The geographic areas that do not follow this general trend are the Beartooth, Washakie, and Wind River areas where the acres in the motorized recreation theme account for 20 to 37 percent of the geographic area.

The geographic areas shown in Figure 1 have no special significance other than they represent easily definable geographic areas across the Forest. They are used to help provide reference for discussing how management varies across the Forest.

Figure 1. Management areas from the 1986 Forest Plan.



Air

Existing Forest Plan management direction

Establish an air resource management program (Forest Plan III-10).

Evaluate and protect wilderness air quality and air quality related values (Forest Plan III-10).

Provide air quality compatible with federal and state laws (Forest Plan III-10).

Comply with State and Federal air quality standards (Forest Plan III-97).

Activity and condition trends

Performance measures

- Alpine lakes monitoring data
- National Atmospheric Deposition Program monitoring data
- Interagency Monitoring of Protected Visual Environment site data

Program management has evolved over time and includes budget planning and execution, intra- and interagency coordination, membership with the Greater Yellowstone Area Clean Air Partnership and, when necessary, reviews of Prevention of Significant Deterioration permits. Program management is supported by an air quality specialist located on the Pinedale Ranger District of the Bridger-Teton National Forest. This individual assists with annual updates to agreements, database management (Natural Resource Information System), technical review of Prevention of Significant Deterioration permits, and project level environmental (National Environmental Policy Act) analysis.

Direct project activity includes weekly monitoring of the South Pass National Atmospheric Deposition Program site and thrice-yearly monitoring of air quality related values at Ross and Saddlebag Lakes.

Indirect project activity includes support for the Dead Indian Pass Interagency Monitoring of Protected Visual Environment site, which is maintained by the Wyoming Department of Environmental Quality Air Quality Division; support for bulk deposition monitoring conducted on the Bridger-Teton National Forest; and support to Forest programs that have the potential to affect air quality, such as prescribed fire projects.

Data have been collected at the South Pass National Atmospheric Deposition Program site since 1985.¹ This site has been funded primarily by Simplot Phosphates LLC as part of their Wyoming Department of Environmental Quality Prevention of Significant Deterioration permit. Their requirements under this permit are expiring; the Forest Service is pursuing alternative funding sources to ensure continued monitoring of this important site.

Data have been collected at Ross Lake in the Class I Fitzpatrick Wilderness and at Saddlebag Lake in the Class II Popo Agie Wilderness since 1982. This monitoring is being conducted to assess the effects of acid deposition on air quality related values such as water quality.

Data have been collected at the Dead Indian Pass Interagency Monitoring of Protected Visual Environment site since 2000 to monitor air quality and visibility in the North Absaroka Wilderness.²

Since 1986, bulk deposition data have been collected at Hobbs and Black Joe Lakes on the Bridger-Teton National Forest. These data, which are used as a surrogate for conditions on the Shoshone National Forest, are displayed in annual summary reports submitted to the Wyoming Department of Environmental Quality. The Forest is represented at the annual Greater Yellowstone Area Clean Air Partnership meetings. These meetings occur to identify and address key issues relating to air quality in the Greater Yellowstone Area

¹ Data are available at <http://nadp.sws.uiuc.edu>.

² Data are available at <http://vista.cira.colostate.edu/improve/>.

(GYA). The partnership allows for exchange of information and dialogue between numerous state and federal agencies responsible for air quality in the GYA. The partnership produced an assessment in 1999 that identifies GYA air quality issues, conditions, pollution sources, and monitoring sites. This document is available at the Supervisor's Office in Cody. The partnership recently agreed that the assessment should be updated, with a target release date of mid-2005.

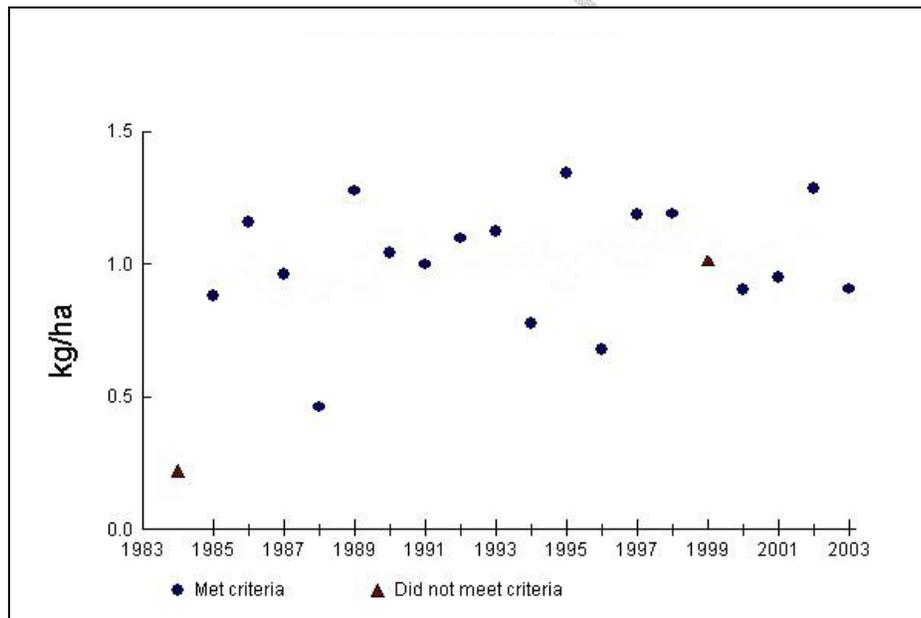
The Forest, through technical support from the Bridger-Teton National Forest, continues to be involved in environmental review of projects being analyzed by the Bureau of Land Management in southwest Wyoming. This off-Forest support also provides monitoring of active industrial development in the area.

Air quality monitoring

Analysis of National Atmospheric Deposition Program data collected between 1985 and 2004 shows a slight trend toward increasing levels of nitrate and inorganic nitrogen in recent years, as shown in Figure 2 and Figure 3. In addition to Forest Service needs, Wyoming Department of Environmental Quality and other agencies continually analyze data collected from this site. These data, along with data from other National Atmospheric Deposition Program sites in Wyoming, are used to model and track emissions and acid deposition across southwest Wyoming, which includes the Class I Fitzpatrick and Class II Popo Agie Wilderness Areas on the Forest. Because of industrial development in southwest Wyoming and growth of several major cities upwind of the Forest, continued monitoring of this site is important relative to Forest managers being able to demonstrate compliance with the Clean Water Act.

Data from the Bridger-Teton National Forest's bulk deposition sampling indicate a general trend of increasing total nitrate deposition as shown in Figure 4.

Figure 2. National Atmospheric Deposition Program/National Trends Network site (WY97 South Pass City) annual inorganic nitrogen wet deposition, 1985 through 2004.³



● Samples taken at the site met four criteria for the summary period (in this case one year).

▲ Samples taken at the site did not meet four criteria for the summary period.

³ Source <http://nadp.sws.uiuc.edu/sites/siteinfo.asp?net=NTN&id=WY97>

Figure 3. National Atmospheric Deposition Program/National Trends Network site (WY97 South Pass City) annual nitrate wet depositions, 1985 through 2004.⁴

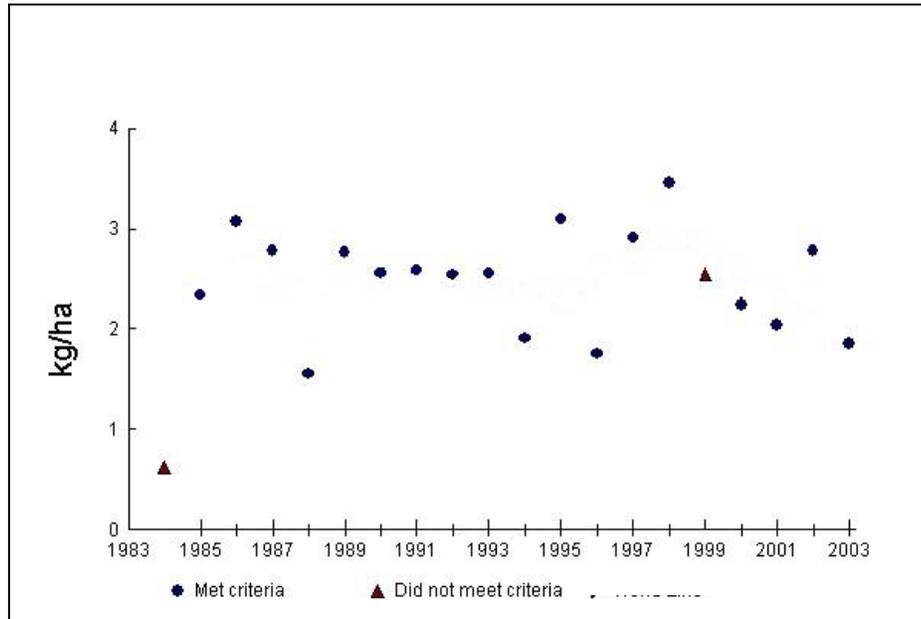
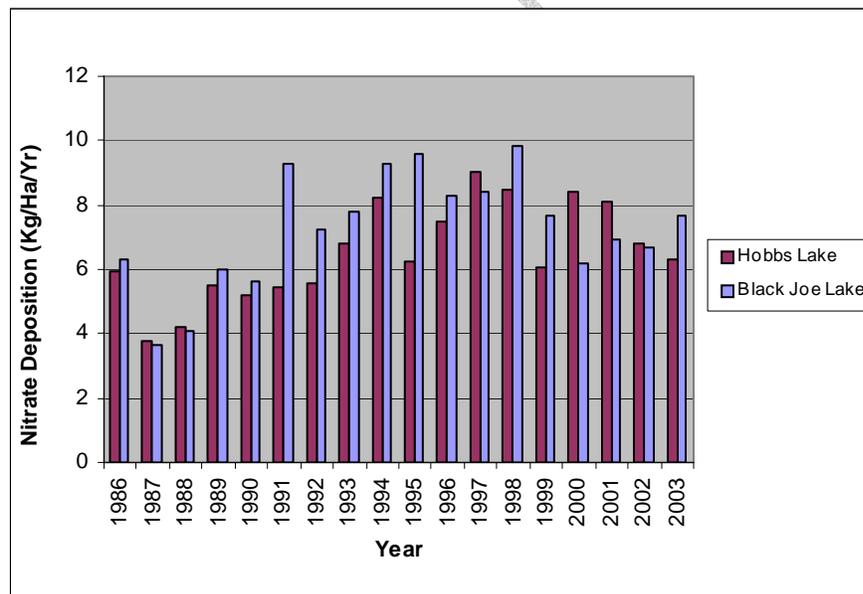


Figure 4. Nitrate deposition data, Bridger-Teton National Forest, 1986 through 2003.



Analysis of lake data collected between 1984 and 1993 (Baron 1996) for air quality related values indicates there does not appear to be a trend in chemical composition. Even though a trend was not identified, a decision was made after receipt of the report to continue the monitoring program because these lakes are susceptible to change from acid deposition due to their low buffering capacity. Data collected between 1994 and 2003 are being analyzed and a report is expected in early 2005.

Analysis of Interagency Monitoring of Protected Visual Environment site data collected at Dead Indian Pass from 2000 through 2003 is occurring and will be used as a baseline as additional data are collected in

⁴ Source <http://nadp.sws.uiuc.edu/sites/siteinfo.asp?net=NTN&id=WY97>

the future. Continued monitoring will help detect changes in air quality and visibility once the baseline has been established. It is too early in the monitoring program to determine trends in air quality.⁵

Projections if existing Forest Plan direction continues

Air quality issues and concerns are expected to increase over time due to increased emissions from upwind sources. As air quality data are collected, analysis will occur to determine if wilderness air quality and air quality related values are being protected. If protection is not being afforded, potential corrective actions will be discussed. However, the effectiveness of mitigation measures taken by the Forest will most likely be limited given that the source of emissions is off-Forest.

Need for change in Forest Plan direction

Current management direction is adequate; there is no need for change in management direction.

Fire management

Existing Forest Plan direction

Reduce the accumulation of natural fuels (Forest Plan III-8).

Provide cost-effective fire protection to minimize the combined costs of protection and damages, and prevent loss of human life (Forest Plan III-10).

The Washakie and North Absaroka Fire Management Plans will be applied as written. Fire management for all other wildernesses will be:

- *Control all man-caused unplanned ignitions*
- *Control all unplanned ignitions with [sic] one-half mile of the boundary between wilderness and non-wilderness*
- *Confine natural unplanned ignitions to less than 1,000 acres from June 20 to September 30*
- *Confine natural unplanned ignitions to less than 2,000 acres from October 1 to June 19 (Forest Plan III-41)*

Reduce the risk from wildfire to its consequences to life and property within wilderness or to resources, life, or property outside wilderness using trained professionals in a cost effective manner (Forest Plan III-41).

Protect life, property, and resource values from wildfire in a cost-efficient manner that maximizes the benefits of shared resources and developing technologies (FSM 5100) (Forest Plan III-95).

Take suppression action on all escaped fires considering the following:

- *The values of the resources threatened by the fire (both positive and negative)*
- *Management objectives for the threatened area(s)*
- *The fuelbeds the fire may burn in*
- *The current and projected weather conditions that will influence fire behavior*
- *Natural barriers and fuel breaks*
- *Social, economic, political, cultural, and environmental concerns*
- *Public safety*

⁵ Data collected to date are available on the Interagency Monitoring of Protected Visual Environment Web site at <http://vista.cira.colostate.edu/improve/>.

- *Firefighter safety*
- *Costs of alternative suppression strategies. Use the escaped fire situation analysis to make this determination (FSM 5130.31) (Forest Plan III-96)*

Reduce or otherwise treat activity fuels so the potential fireline intensity of an area will not exceed 400 BTUs/sec/ft on 90 percent of the days during the regular fire season, or break up continuous fuel concentrations exceeding the above standard into manageable units with fuel breaks or fire lands, ... (Forest Plan III-96).

Primitive recreation area, High Lakes Wilderness Study Area, and the Dunoir Special Management area

Maintain fire-dependent ecosystems using prescribed fires or fires ignited naturally (Forest Plan III-144, III-244).

Wildlife emphasis (management indicator species) areas

Maintain fuel conditions which permit fire suppression and prescribed fire to maintain habitat needed for selected species or species population levels (Forest Plan III-152).

Aspen emphasis areas

Apply prescribed burning to regenerate aspen and to benefit wildlife (Forest Plan III-157).

Whiskey Mountain portion of Fitzpatrick Wilderness

Prescribed fire will be utilized as a management technique where it is the most cost-efficient and acceptable alternative to achieve bighorn sheep habitat objectives (Forest Plan III-206).

Research Natural Areas

Extinguish wildfires endangering the RNA. Allow fires within the RNA to burn undisturbed unless they threaten persons or property outside the area, or the uniqueness of the RNA (Forest Plan III-233).

Do to reduce fire hazard within the RNA (Forest Plan III-233).

Activity and condition trends

Performance measures

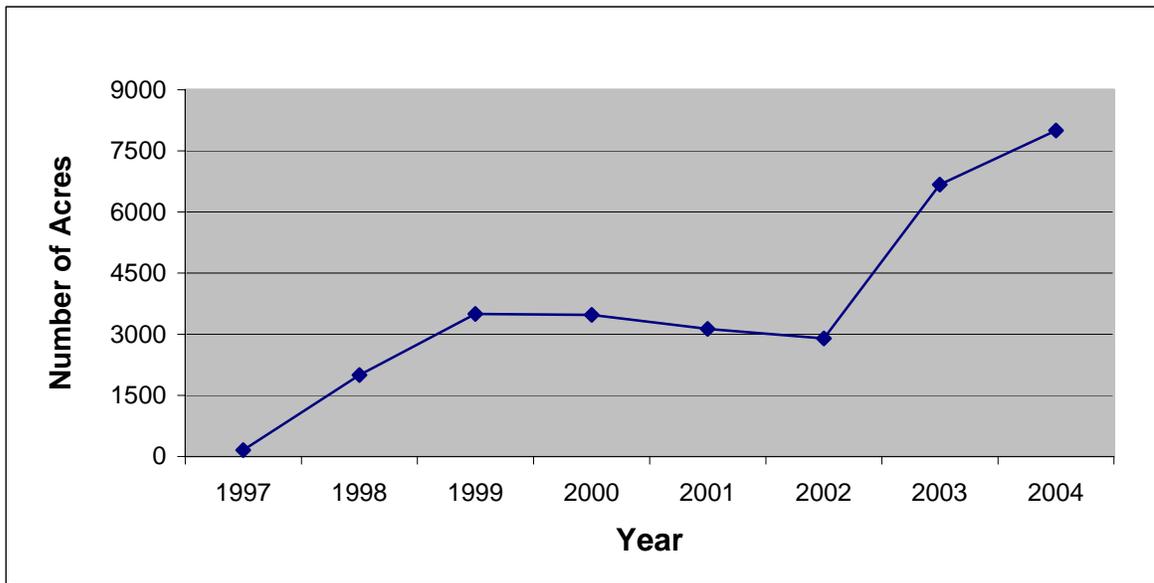
- Acres of fuels treatment
- Acres of wildfire
- Numbers of wildfires

In 1998, the Forest increased its prescribed burn program as part of the overall fire management program. With the 2000 National Fire Plan, funding increased to facilitate increases in staffing and equipment to further support the fire program. During the fall of 2002, the Forest engaged in a Forest-wide vegetation analysis, resulting in an integrated vegetation management program. The 2003 Healthy Forests Initiative and the Healthy Forests Restoration Act combined to provide the tools, funding, and expectation to treat hazardous fuels and improve fire regime/condition class.

The Forest has completed fire management guides for all five wilderness areas.

Hazardous fuel conditions are present throughout much of the forest. Some conditions are a result of fire exclusion and have resulted in changes in vegetation type and structure, such as sagebrush-grasslands that are being overgrown with juniper and other conifers or aspen stands that are now dominated by conifers. Middle elevation conifer stands have become mature and are homogeneous on a landscape scale. They lack diversity in age or size classes and are more prone to large-scale, high severity stand replacement wildfires rather than mixed severity. The natural fuel conditions of the spruce-fir forest and high elevation subalpine forests are typically considered to be in a state of high hazard. Hazardous fuel conditions are also being augmented by an insect outbreak that has resulted in tree mortality on thousands of acres. New areas of infestations continue to develop throughout the Forest.

Figure 5. Acres of fuels treated, 1997 through 2004.



Since 1970, the Forest has averaged 26 wildfires annually, averaging 49 percent from natural ignition, 32 percent from escaped campfires, and 19 percent from all other causes. Excluding 1988, lightning-caused fires burned 87 percent of the acreage, campfires burned 5 percent, and all other human causes burned 8 percent.

Over the last century, the Forest’s fire management program has been focused on fire suppression, with efforts to keep fires as small as possible. Due to persistent drought, the trend in acreage burned since 1998 has been increasing, with the exception of 2004, which was cooler and wetter than previous years.

Figure 6. Number of fires by size, 1970 through 2003.

Size in acres	Number of fires
0 to 0.25	652
0.25 to 9.9	58
10 to 99.9	129
100 to 299.9	8
300 to 999.9	4
1,000 to 4999.9	9
> 5,000	5

Figure 7. Annual number of wild fires, 1970 through 2003.

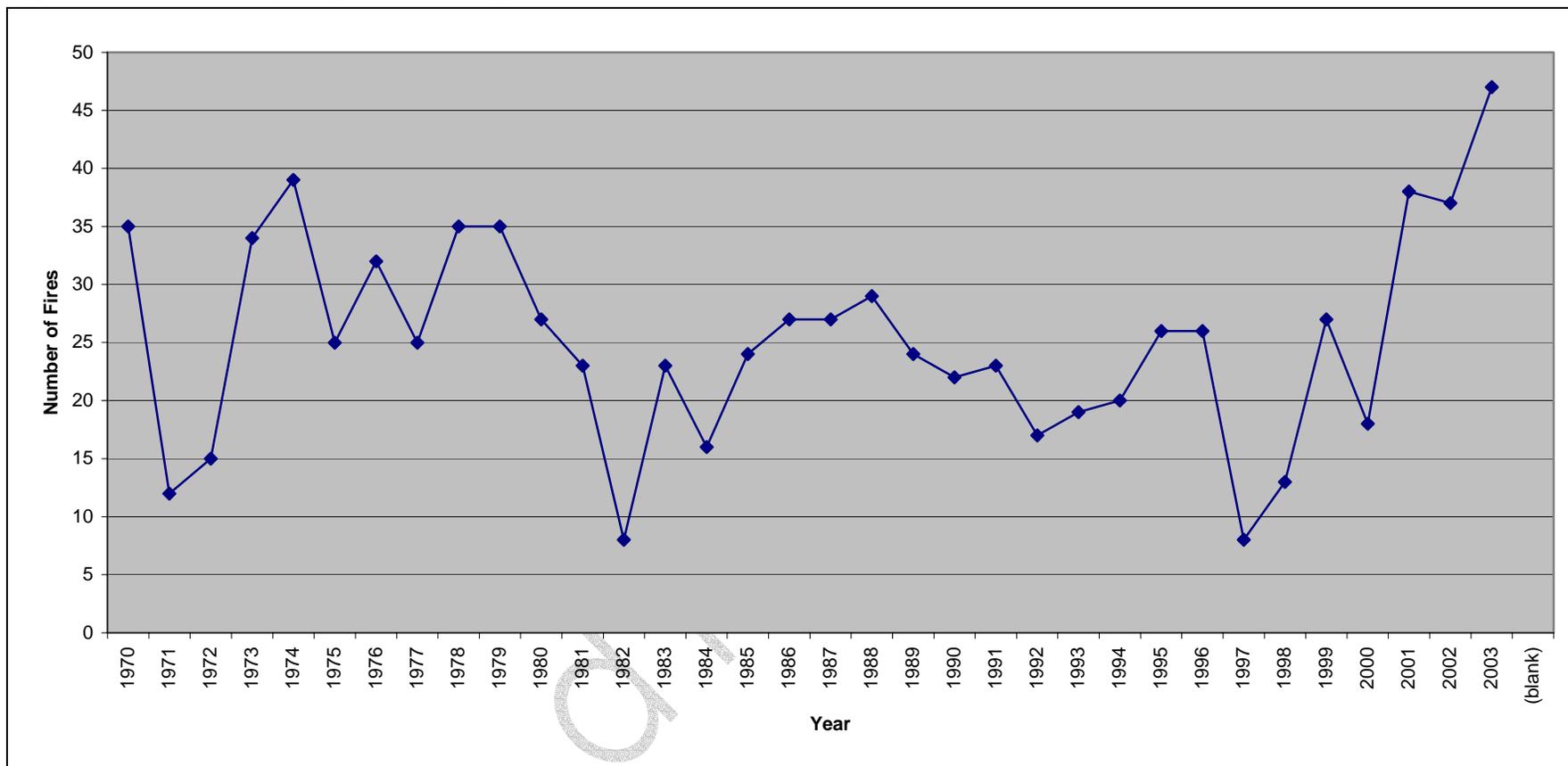
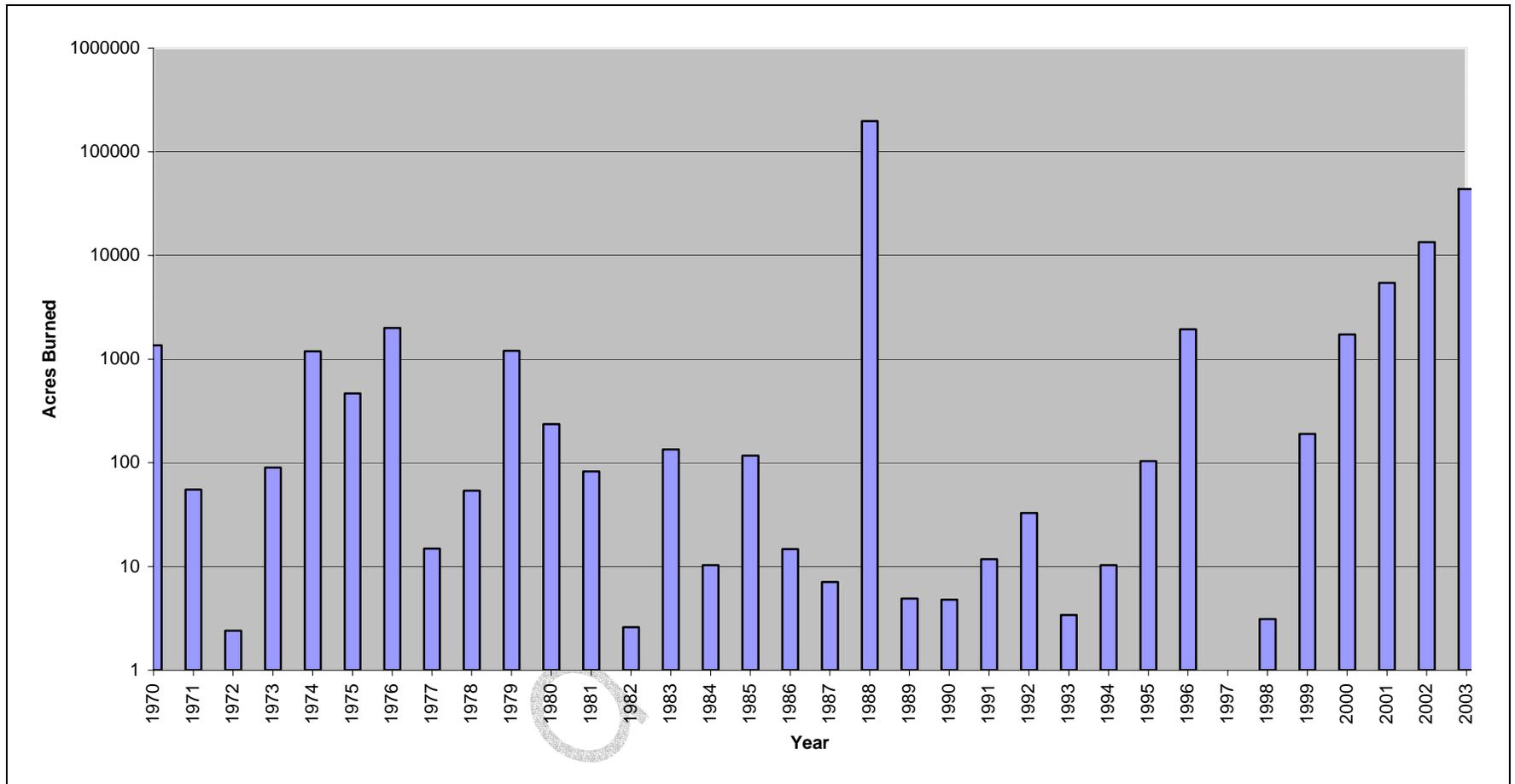


Figure 8. Annual acreage burned, 1970 through 2003.



Projections if existing Forest Plan direction continues

Under current direction, suppression would continue as the primary focus of fire management to protect life, property, and resources. Recent policy changes and the National Fire Plan emphasize hazardous fuels treatments, especially on National Forest System land associated with communities at risk, municipal watersheds, threatened and endangered species habitat, and other important local features where conditions favor uncharacteristically intense fires.

Under current conditions, suppression costs will continue to increase, particularly on land where homes are built next to the national forest. Investments such as resources and developments may be at risk. Additional costs may be incurred to reduce post-wildfire threats to life and property from floods, debris flows, and landslides.

Historically, wildfire leaves a patchwork of uneven aged stands and diverse habitats. When an uncharacteristically large fire takes place, the patchwork of diversity is replaced with a more homogenous stand. The complexity and diversity of the uneven aged patterns in the ecosystem are reduced. Critical fish and wildlife habitats may also be impacted by uncharacteristic fire.

Hazardous fuel reduction using prescribed fire and mechanical means would likely continue at the lower elevations near the wildland urban interface and other areas with high resource values that are accessible to crews and mechanized equipment. Some reduction would also occur in wilderness where wildland fire use is permitted. Large wildfires would result in some fuel reductions as well. However, the increase in fuel accumulations on the Forest from in-growth and the insect outbreak will likely exceed the fuel reductions associated with management objectives and activities prescribed in the current forest plan. This increase will be most prevalent in the areas with no or limited opportunity for prescribed fire or mechanical treatments such as the roadless areas where wildland fire use is not permitted at this time.

The use of wildland fire for resource benefit is expected to become a major component in the future.

All smoke management decisions under current direction are made in accordance with the State of Wyoming air quality regulations. The number of fires, location, elevation, extent, duration of smoke, atmospheric conditions, and public sentiment are some factors that influence decisions to use prescribed burns. These factors also influence decisions to allow wildland fire to achieve ecosystem management objectives within the parameters of social and economic concerns. Smoke emissions from prescribed fire and wildland fire are likely to increase.

Need for change in Forest Plan direction

Agency fire management policies have been through significant change. Some of the factors influencing these changes include the 1995 Federal Wildland Fire Management Policy Review, the Healthy Forests Initiative, the Healthy Forests Restoration Act, and the National Fire Plan. Additionally, changes on the ground with regard to the burning conditions have affected our ability to protect public and private values while at the same time being able to suppress fires safely and cost effectively. Given these changes, several items need to be incorporated through forest plan revision with regard to fire management. These items include:

- Changes in agency fire management policy, direction, and terminology
- Emphasis on reduction of hazardous fuels and improvement of fire regime condition class
- Smoke management
- Integrated fire and fuel management direction, and desired conditions and objectives that enhance firefighter and public safety

Fire management direction has been based primarily on a model of appropriate *suppression* response rather than the appropriate *management* response. Current Forest Plan direction incorporates a mix of the two models, resulting in some inconsistencies and perhaps lost opportunities to more cost effectively manage wildland fire, sustain ecological functions, or achieve resource benefits. For example, maintaining fire

dependent ecosystems is part of current Forest Plan direction; however, it is limited to natural ignitions in the five designated wilderness areas on the Forest and requires a suppression response in all other management areas.

While there are widespread additional opportunities for wildland fire use, there are resources of significant value that are in need of protection, including wildland urban interface, high use recreation areas, timber and grazing, municipal watersheds, heritage resources, and critical wildlife and fish habitats. The desired conditions and objectives in the Plan need to better reflect the values at risk to be protected and provide a fire and fuels management strategy that is more refined, adaptive, and comprehensive.

Fire Regime Condition Class (FRCC) is an interagency, standardized tool for determining the degree of departure from reference condition vegetation, fuels, and disturbance regimes. The greater the deviation from the historic fire occurrence, the greater the risk of loss of ecological function because of uncharacteristic fire behavior. The revised forest plan needs to incorporate the concept of FRCC within the desired conditions and objectives for overall management of the Forest. This consideration should include a strategic approach to prioritizing and managing hazardous fuels accumulations. In addition, a performance measure should be added for fuels treatment acres within each Fire Regime Condition Class that are outside the historic fire occurrence.

The current Forest Plan provides limited guidance on smoke management. Prescribed fire and wildland fire use have increased and will continue to increase—resulting smoke emissions from these sources will increase. The revised Forest Plan needs to consider potential smoke emissions from these sources, air quality standards, and visibility/regional haze regulations.

The revised plan's desired conditions and objectives need to incorporate the direction from the Wilderness Fire Management plans that have been prepared.

The revised plan should determine what areas of the Forest are suitable for wildland fire use.

Performance measures

- Acres of wildland fire use
- Acres of fuels treatment

Heritage

Existing Forest Plan direction

Locate historical and archaeological sites; evaluate them for significance; and preserve, protect and/or interpret for public information a representative sample of sites associated with and typifying the economic and social history of western Wyoming (Forest Plan III-7).

Maintain existing facilities (e.g., ranger stations) of historic significance in their original rustic character (Forest Plan III-10).

Protect, find an adaptive use for, mitigate according to an approved mitigation plan, or interpret all cultural resources on National Forest System lands which are listed on the National Register of Historic Places, the National Register of Historic Landmarks, or have been determined to be eligible for the National Registers (Forest Plan III-23).

Nominate or recommend cultural resource sites to the National Register of Historic Places by 1990 in the following priority:

- *Sites representing multiple themes*
- *Sites representing themes which are not currently on the National Register within the state*
- *Sites representing themes which are currently represented by single sites (Forest Plan III-23)*

Activity and condition trends

Performance measures

- Number of sites recorded
- Acres surveyed for heritage resources

Quantifiable items for cultural resources are acres surveyed and sites recorded and evaluated since 1986. These numbers are estimates and are used to reflect trend rather than exact numbers of acres or sites.

In Figure 9, note the increase in the number of new sites recorded since 2001. The increase is due to additional funding available to national forests for implementation of the National Fire Plan. This trend will most likely level off between 150 and 200 new sites recorded yearly. The estimate is based on the average number of acres surveyed per year and the number of sites found per survey.

Figure 9. Number of new sites recorded since 1986.

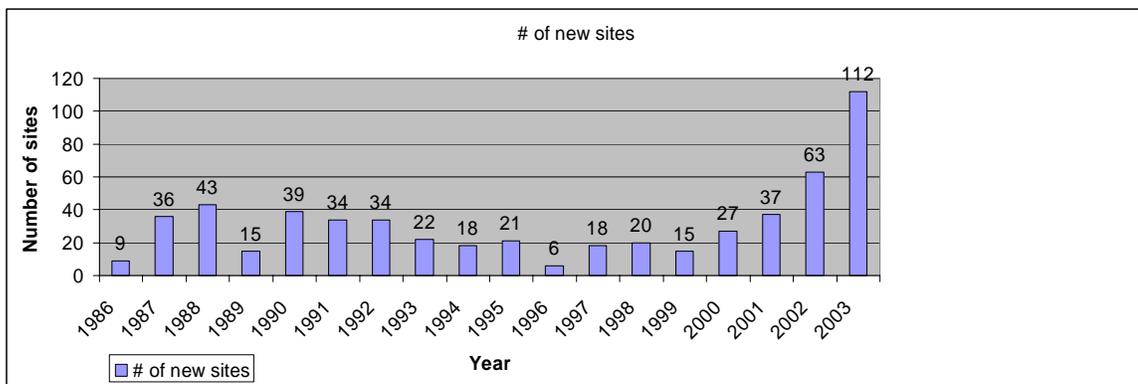
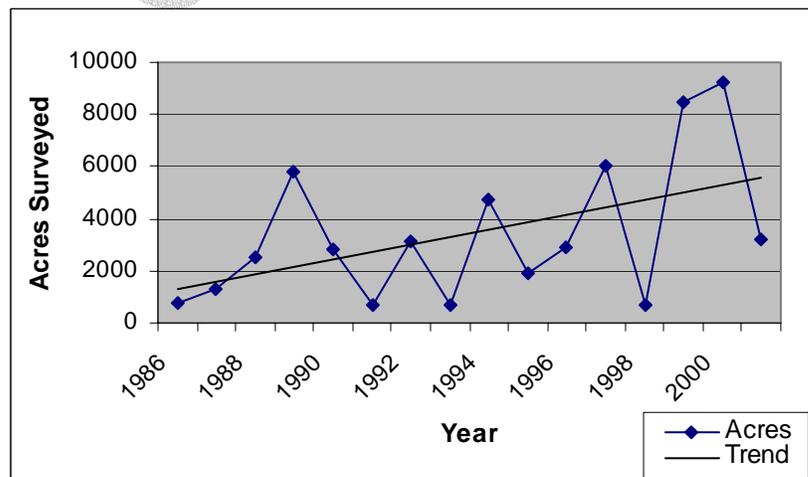


Figure 10 shows the number of acres surveyed since 1986. The trend for the last several years has been an increase in survey acres. This trend is expected to continue in the short term (2 to 5 years) to keep up with National Fire Plan projects. In the longer term, the number of acres surveyed should start to decrease to an average level of perhaps 4,000 to 5,000 acres per year.

Figure 10. Number of acres surveyed since 1986.⁶



⁶ Not all 2002 to 2004 data are shown.

A goal in the Forest Plan is that by 1990 eligible sites would be nominated or recommended for the National Register of Historic Sites. If nomination or recommendation means determining eligible sites—a process that includes recommendation—then this goal was met for sites surveyed at that time. Since 1990, all newly discovered sites have been evaluated, previously recorded sites that fell within new surveys were monitored and/or reevaluated, and two sites have been nominated for listing in the National Register of Historic Places.

Projections if existing Forest Plan direction continues

The number of acres and sites surveyed is dependent on the number of projects implemented or planned on the Forest. That is, when more projects are implemented, more acres are surveyed and more sites are recorded. As we continue to implement the National Fire Plan, the number of acres surveyed will continue to increase.

Need for change in Forest Plan direction

The revised plan needs to incorporate the direction provided by new laws such as Executive Order 13084 Consultation and Coordination with Indian Tribal Governments, and the Native American Graves Protection and Repatriation Act, and others.

Lands—ownership and uses

Existing Forest Plan direction

Acquire private lands within wilderness. Consolidate national forest ownership patterns (Forest Plan III-9).

Pursue land ownership adjustments to improve management efficiency for both National Forest System land and intermingled private land and to meet high priority resource management objectives (Forest Plan III-9).

Provide increased public access to National Forest System lands, appropriate to the management objective of the areas served (Forest Plan III-7).

Acquire necessary rights-of-way to facilitate management of the Forest including public access to National Forest System lands (Forest Plan III-9).

Classify lands or interest in lands for acquisition where lands are valuable for NFS [National Forest System] purposes according to the following priorities:

- *In designated wilderness areas and other Congressionally classified areas*
- *Where lands or rights-of-way are needed to meet resource management goals and objectives*
- *Lands which provide habitat for threatened and endangered species of animals and plants*
- *Lands which include floodplain or wetlands*
- *On lands of the National Grasslands that provide opportunities for demonstration of multiple uses in grassland agriculture*
- *On lands having historical or cultural resources, outstanding scenic values or critical ecosystems, when these resources are threatened by change of use or when management may be enhanced by public ownership (Forest Plan III-83)*

Classify lands for disposal according to the following priorities:

- *To states, counties, cities, or other federal agencies when disposal will serve a greater public interest*
- *In small parcels intermingled with mineral or homesteads patents*
- *When suitable for development by the private sector, if development (residential, agricultural, industrial, recreational, etc.) is in the public interest*

- When critical or unique resource (wetlands, floodplains, essential big game winter range, threatened or endangered species habitat, historical or cultural resources, critical ecosystems, etc.) effects are mitigated by reserving interests to protect the resource, or by exchange where other critical resources to be acquired are considered to be of equal or greater value
- In National Grasslands, when they offer no opportunity to meet National Grassland demonstration objectives (Forest Plan III-84).

Effect jurisdictional transfers, which achieve the following objectives:

- Reduce duplication of efforts by users and agencies in terms of time, cost, and coordination
- Improve or maintain user access to the administering agency
- Decrease travel and enhance management
- Improve public understanding of applicable laws, regulations, policies, and procedures
- Develop more effective and efficient work units
- Reduce administrative cost (Forest Plan III-84)

Where appropriate and necessary, acquire rights-of-way on existing National Forest System roads and trails (Forest Plan III-83).

Activity and condition trends

Performance measures

- Acres of land disposed
- Acres of land acquired
- Number of rights-of-way

Landownership adjustment

Land ownership adjustment through purchase and exchange is an important tool for meeting the goal of improving the efficiency of land management and meeting resource management objectives.

The landownership pattern on the Shoshone National Forest is highly consolidated, with few inholdings of private land within the Forest boundary. Acquisition projects in the last fifteen years have further improved this pattern with the acquisition of a large number of inholdings on the Greybull Ranger District.

Acquisition of other inholdings is desired, but limited by other Forest priorities, the willingness of sellers, and the ability to obtain funding for acquisition of high priority parcels.

Figure 11. Shoshone National Forest acreage for 1986, 1991, and 2003.

Year	Acres
1986	2,433,125
1991	2,432,990
2003	2,437,218

Figure 12. Acres of land disposed.

Year	Transaction	Acres
1986	Wyoming Game and Fish	161
1988	Goodyear	3
1989	Julien	1
1991	Stuart	3
1991	B4 Ranch	1
1996	South Fork exchange	157
1997	Les Terry	<1
1998	TE Ranch exchange	55
	Total	382

Figure 13. Acres of land acquired.

Year	Transaction	Acres
1986	Wyoming Game and Fish	160
1991	Deer Creek trailhead	1
1992	Kirwin	3,843
1996	South Fork exchange	103
1998	TE Ranch exchange	365
2002	Dunrud	589
	Total	4,530

Number of rights-of-way

Increased public access to National Forest System lands was identified in the 1986 Forest Plan as a Forest goal. Obtaining access rights necessary for both management of and access to Forest lands by the public is extremely challenging.

Most landowners are unwilling to grant access rights in perpetuity on a voluntary basis. The majority of perpetual, full, access rights obtained in the past fifteen years has been obtained through the landownership adjustment program. Some access rights for timber management activities have been obtained on a temporary basis. While this solves an immediate access need, it also often has the effect of decreasing the ability to obtain access rights in perpetuity.

Figure 14. Rights-of-way needed per year.

Years	Rights-of-way
1985 through 1990	3
1991 through 2000	2
2000 forward	2

Projections if existing Forest Plan direction continues

The availability of privately held lands identified for acquisition will decrease as inholdings become developed. Obtaining legal access to Forest lands through land-ownership adjustment will become more important.

Acquiring full legal access to Forest lands to support resource management as well as public recreation will continue. The ability to obtain access by purchase will continue to decrease.

Need for change in Forest Plan direction

Current management direction is adequate; there is no need for change in management direction.

Minerals

Existing Forest Plan direction

Direct minerals area management toward the use of minerals related activities to enhance surface resource programs, to facilitate the uninterrupted flow of National Forest System mineral resources while ensuring adequate protection of the surface resources and the environment (Forest Plan III-9).

Prevent or control adverse impacts on surface resources in accordance with 36 CFR 228 (Forest Plan III-74).

Forest Plan amendment 96-001 direction

Direction from the 96-001 amendment will be added.

Activity and condition trends

Performance measures

- Numbers of permits
- Number of leases
- Acres leased

The Forest Service's role in minerals management is to protect and manage surface resources while encouraging and facilitating mineral and energy exploration and development.

In the last decade, activities in mineral materials averaged less than 30 permits per year and resulted in the removal of several hundred tons of rock. Some free use is allowed. Management of mineral materials is expected to continue at a low level for the Forest, with interest increasing in the use of decorative rock.

For locatable minerals, Notices of Intent and Plans of Operations are the mechanisms used to authorize mining ventures. In the past six years, the Forest has averaged less than one Notice of Intent per year. Recreational activities for locatables, such as panning for gold, have increased in the past several years. There is a growing interest in recreational dredging.

Most oil and gas wells near the Shoshone National Forest would be considered mature wells (over 40 years old). Often these wells are involved in tertiary recovery (the last phase of recovery), which requires stimulation materials to increase or maintain production. Stimulation materials, such as carbon dioxide, help increase the flow of oil underground. These wells have an additional recovery expectancy of over 20 years. To enhance recovery, companies are now directional drilling from the original drilling pad. Directional drilling requires less infrastructure, such as new roads and pipelines. Recently, due to high oil and gas prices, drilling has increased adjacent to the Forest. Less than 10 percent of exploratory wells result in production of oil and gas. Some success in the Clark area has initiated interest in seismic exploration on areas adjacent to the Forest.

There are no active wells on the Forest. Of the 34 wells drilled, 31 have not produced and three have been capped due to low production. Nonetheless, with the increase in oil and gas prices in 2003 and 2004, interest in leasing on the Forest has increased in the form of several new lease applications.

Figure 15. Acres of oil and gas leased per year, 1970, and 1973 through 2003.

Year	Acres leased								
1970	6,719	1977	11,289	1982	129,628	1987	28,000	1999	0
1973	33,883	1978	6,858	1983	94,086	1988	70,934	2000	1,950
1974	6,375	1979	3,093	1984	37,032	1989	56,520	2001	0
1975	5,168	1980	34,903	1985	6,329	1990	2,119	2002	0
1976	16,609	1981	111,424	1986	27,694	1998	2,775	2003	0

Projections if existing Forest Plan direction continues

Development of locatable minerals will continue under the provisions of the 1872 Mining Law on Public Domain Lands. Management of locatable minerals, based on statutory rights, may affect management of other resources. The Forest Service will minimize these effects to the fullest extent of its regulatory authority. Some impacts may be occurring on riparian habitat from recreational dredging.

Adequate protection for grizzly bear habitat was a key part of the Record of Decision for oil and gas leasing (USDA Forest Service 1996). While protection appears to be adequate during the exploration phase, full field development would impact the grizzly bear unless adequate mitigation is in place. A lease notice protecting threatened and endangered species is attached to every lease.

If oil and gas prices remain relatively high, interest in oil and gas leasing would continue where there is a moderate or high potential for oil and gas and where surface occupancy is allowed, which is about 11 percent of the Forest or 26,500 acres (USDA Forest Service 1992). High potential areas on the north zone of the Shoshone National Forest are mainly on the Greybull Ranger District, the southern part of the Wapiti Ranger

District and the Line Creek drainage on the Clarks Fork Ranger District. The Greybull Ranger District also contains moderate potential areas. Twenty-nine percent of high and moderate potential areas on the Greybull Ranger District are available for surface occupancy. It was estimated in the Oil and Gas Leasing Final Environmental Impact Statement (USDA Forest Service 1992) that eight exploratory wells could be expected on the northern Shoshone National Forest from 1995 to 2005.

On the south zone of the Forest, high potential areas occur north of the Fitzpatrick Wilderness and in the Horse Creek drainage. There are no moderate potential areas on the south zone. Eighty-seven percent of the high potential areas are available for surface occupancy. The Oil and Gas Leasing Final Environmental Impact Statement (USDA Forest Service 1992) estimated thirteen exploratory wells between 1995 and 2005. The probability of full field development is low (20 percent) and total ground disturbance would be less than 640 acres.

Need for change in Forest Plan direction

The revised forest plan should

- Reflect the limitation on management options for locatable minerals given the provisions contained within the 1872 Mining Law
- Contain adequate management direction to address impacts from recreational dredging
- Incorporate direction on oil and gas leasing that may be provided by the Forest Plan Amendments for Grizzly Bear Conservation for the Greater Yellowstone Area National Forests scheduled to be completed in 2005
- Incorporate direction on oil and gas leasing and minerals management in the Canada Lynx Conservation Assessment and Strategy

The revised plan should identify areas that are generally suitable for oil and gas considering the revised plan desired conditions and objectives.