

FY 2010 Monitoring and Evaluation Report

Bighorn National Forest

In 2001, the livestock grazing permittee and the Forest Service agreed resource damage was occurring to Big Willow Creek. Between 2001 and 2008, the permittee and Forest Service cooperated to change stocking rates and management of pastures. The resulting improvements to the riparian vegetation and stream course are visible in these photos.



Big Willow Creek June 8, 1991 (Bighorn NF files)



Big Willow Creek August 2008 (David Beard, Tongue RD)

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CERTIFICATION

The Revised Bighorn National Forest Land and Resource Management Plan Record of Decision (ROD) was signed September 30, 2005. The forest plan is a dynamic document, subject to change based on annual monitoring and evaluation as we implement. Through monitoring, we determine whether the plan is sufficient to guide management for the subsequent year or whether the plan or our management actions should be modified.

Changes to forest plan chapter 4 were identified during the preparation of this report. Some of the monitoring questions were either unclear or did not fully address the monitoring drivers. Some of the monitoring frequencies were also modified to better measure trend. Text highlighted in grey indicates administrative changes to monitoring questions or monitoring frequency. This 2010 monitoring report makes the changes final, and they become a part of the forest plan.

Through a site-specific analysis, we found the biological evaluation for the forest plan needed to be updated to include species on the most current Regional sensitive species lists. Review of the biological evaluation showed that existing forest plan direction addresses the needs of the additional species and there is no need to change guidelines, strategies, or standards. The 2011 *Supplement to the Forest Plan Biological Evaluation* can be seen on the forest's external web page at <http://www.fs.usda.gov/main/bighorn/home>.

I have reviewed the fiscal year (FY) 2010 annual monitoring and evaluation report for the Bighorn National Forest. I believe the results of monitoring and evaluation for FY 2010 meet the intent of chapter 4 of the forest plan and of 36 CFR 219.11. I also believe the monitoring and evaluation requirements in chapter 4 have been met, and the decisions made in the forest plan are still valid.

William T. Bass

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Feb. 21, 2012

Date

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Attachment A – Monitoring table

Attachment B – Management Indicator Species Supplemental Report

2010 Monitoring and Evaluation Report Executive Summary

Monitoring and evaluation are important parts of implementing the forest plan. When the plan was revised in 2005, four steps for successful monitoring were established: 1) setting priorities for monitoring items so budgeting could focus on the highest priority, 2) identifying who would be responsible for the monitoring items and who potential cooperators might be, 3) evaluating the collected data, and 4) publishing the data in a report. This is the monitoring and evaluation report for fiscal year 2010, and it contains a five-year review.

Monitoring is the collection of data and information; evaluation is the analysis of the collected data and information. Evaluation answers the monitoring questions, determines whether forest plan revision or amendment is warranted, and shows whether plan implementation should be modified.

Monitoring and evaluation are the backbone of adaptive land management, and there are

three primary parts. The first part is making sure the forest plan is being followed during project planning and implementation. That is *implementation monitoring*. Another part is regularly checking in with forest plan objectives to see how well they are being achieved – *effectiveness monitoring*. *Validation monitoring* is done to determine if forest plan expectations and assumptions still hold true.

The desired conditions for the forest are described in three-tiered hierarchy of goals, objectives, and strategies. The four main goals (see page 2) are the basis for the development of the objectives, and each objective has specific strategies.

The monitoring strategy for the Bighorn National Forest looks at all the forest plan objectives and strategies using the three types of monitoring. Some monitoring is done annually; other monitoring is done less frequently – every two, three, five, or ten years, for example.

Implementation Monitoring

Is forest plan direction being followed during project planning and implementation?

Effectiveness Monitoring

Are management activities effective in achieving forest plan goals, objectives, and strategies?

Validation Monitoring

Is there a better way to meet forest plan goals and objectives and achieve desired conditions? Is there a need to change or amend the forest plan?



So, how do the three types of monitoring and the goals and objectives all fit together? Implementation monitoring focuses on projects, while effectiveness and validation monitoring tie to the objectives listed above. The following sections present the three monitoring approaches and summarize what we have learned from the monitoring.

Implementation monitoring focuses on the projects the forest analyzed and/or implemented from 2006 to 2010. The *Effectiveness Monitoring* section summarizes monitoring for the eleven objectives. Specific monitoring for the objectives and all their strategies is discussed in the monitoring table (see attachment A). The section on *validation monitoring* reports any changes that have taken place since the forest plan was revised in 2005 and discusses how those changes impact our assumptions, desired conditions, and direction.

Implementation Monitoring

Between 2006 and 2010, the forest completed seventy-seven environmental analyses. One was an environmental impact statement (EIS), fourteen were environmental assessments (EAs), and sixty-one projects were categorically excluded from documentation (CEs). Each proposal began with a review of the forest plan to determine 1) if it was an allowed project, 2) what forest plan direction applied to the proposal, and 3) what requirements were needed during implementation to meet forest plan direction and/or reduce or eliminate environmental effects. Most of the analyses were on recreation-based proposed actions; however, prescribed fire and timber harvest proposals were also analyzed.

Effectiveness Monitoring

Effectiveness monitoring is summarized for each of the eleven objectives listed on the previous page. A complete report of the monitoring completed for the objectives and strategies is in the monitoring table, attachment A.

Goal 1 Ensure Sustainable Ecosystems

Improve or protect water and soil

A water quality monitoring plan was developed in 2006 and has been implemented yearly since that date. Thirty-four, long-term stream monitoring sites were established across the forest. Analysis of trend for these sites is slated for 2015.

Fourteen watershed improvement projects have been completed since 2006. They include streambank revegetation, repair of stream crossings, culvert installation, and trail maintenance to reduce erosion on motorized trails. As the projects are being implemented, best management practices (BMPs) are applied to protect soil and aquatic resources, and BMP reviews are conducted each year to evaluate how effective the BMPs are. BMP reviews are also discussed under validation monitoring on page 8.

Provide habitat for emphasis species

This objective is monitored by tracking the conservation strategies and management plans which protect emphasis species and by surveying for species and their habitat, with a focus on management indicator species (MIS) and

threatened, endangered, and sensitive species (TES). The following is a review of the monitoring for emphasis species. For a more thorough discussion, refer to attachment A, the monitoring table, and attachment B, the *Management Indicator Species Supplemental Report*.

A rangewide conservation strategy and an associated conservation agreement were developed for the Yellowstone cutthroat trout in 2010. One mile of Yellowstone cutthroat trout habitat was improved in Mill Creek and twenty-two miles of stream were prepared for Yellowstone cutthroat trout reintroduction in cooperation with the Wyoming Game and Fish Department (WGFD).

Biologists surveyed for Oreohelix snails, amphibians, water voles, beaver, bats, owls, peregrine falcons, and goshawks. The forest worked with WGFD and the Rocky Mountain Bird Observatory to get information on amphibians, rainbow trout, beaver, bird species, bats, and bighorn sheep.¹

Using prescribed burning and mechanical treatment of vegetation, 830 acres of wildlife habitat were improved. Over 300 acres of wildlife exclosures were maintained. Overall, the forest is likely at the same level of elk security as when the forest plan was finalized in 2005. Initial review of the computer model used to measure elk security indicated an overall increase in elk security; however, there are discrepancies in the model because this is not the case on the ground. In places where natural disturbances occurred, there was a loss within a watershed. The Woodrock and

¹ Bighorn sheep were added to the regional sensitive species list in 2009. The forest prepared a supplement to the forest plan biological evaluation to address the change in bighorn sheep status. The result of the analysis was that current forest plan direction for bighorn sheep is sufficient.

Babione projects are examples of successful applications of the model. Some new roads were created for these timber sale projects and some existing motorized routes were closed to make up for the increase. The result was no change in the amount of elk security habitat in the project areas.

The *Management Indicator Species Supplemental Report* (attachment B) reports the following for MIS: Adequate habitat is being maintained for red-breasted nuthatches. Beaver populations have declined by approximately 13% since 2003. Data on red squirrels show wide variability in populations. Brewer’s sparrow populations have fluctuated with no apparent tie to habitat. Rainbow trout are getting bigger which suggests habitat is being maintained or improved. WGFD data indicates elk populations are exceeding population objectives.

Maintain or increase the amount of healthy forests and rangelands

Forest stand conditions were improved through timber harvest, fuel treatment projects, and prescribed burning. Prescribed burning was used to treat 5,700 acres, and on 500 acres, conifer encroachment was removed from aspen stands. Monitoring for insect or disease outbreaks in high-value areas (campgrounds, summer homes, lodges and other developed facilities) showed no evidence of outbreaks. Over the past five years, the forest has done vegetation management on approximately 69,720 acres, which is 146% over what was projected in the forest plan. This was possible because of special funding including the American Recovery and Reinvestment Act (ARRA). This level of vegetation management is not

expected in the next five years due to reduced budgets and poor timber markets.

In cooperation with the Big Horn, Johnson, and Washakie County weed and pest departments, 2,691 acres of the estimated 2,700 acres of noxious weeds on the forest have been treated over the past five years; 1,509 of those acres were treated in 2010. Monitoring shows increases in spotted knapweed, oxeye daisy, and leafy spurge populations since 2006. Most of this increase occurs on national forest system (NFS) lands in Sheridan County.

**Goal 2
Multiple Benefits to People**

Provide diverse, high quality recreation opportunities

In July 2008, the forest completed a recreation facilities analysis (RFA) which showed the forest has more developed facilities than can be maintained

to standard. To meet the objective of high quality recreation opportunities, the forest plans to close and reclaim some campgrounds, while others change from overnight facilities to day use only.

RFA implementation began in 2009. Accomplishments include closure of three campgrounds and one picnic ground, installation of nine new campground toilets, and rehabilitation of eight campground wells and pumps. The Medicine Wheel/Paintrock Ranger District is analyzing implementation of the RFA. On the Powder River Ranger District, new analyses began on a day-use hiking trail at Meadowlark Lake and on the management of recreation use in the West Tensleep corridor.

Improve the capability of wilderness, heritage sites and special areas to sustain benefits and values

The Wyoming Department of Environmental Quality (WYDEQ) monitors air quality for Cloud Peak; no impairment has been found to date. The long-term lake sampling work continued in 2010.

Emerald Lake and Florence Lake were sampled three times. Samples are analyzed for air and water quality information.

Heritage sites are protected through the forest's programmatic agreement with Wyoming State Historic Preservation Office (SHPO) and the Advisory Council on Historic Preservation. Since 2005, more than fourteen thousand acres (14,261) have been inventoried for cultural resources. In 2010, the forest presented six heritage programs, constructed or maintained fifty-three interpretive signs, printed two brochures, and presented one video to increase public education.

Medicine Wheel National Historic Landmark (NHL) monitoring meetings with consulting parties were held in July and August, and in November 2010, the updated NHL nomination was submitted and approved by the National Park Service NHL committee.

Provide sustainable levels of uses, values, products, and services.

From timber, mining, and grazing to recreation programs and scenery, the forest provides its users with sustainable levels of goods, services, and values.

Between 2005 and 2010, the forest sold 120% of the total sale program quantity (TSPQ) of timber projected in the forest plan. TSPQ is made up of sawtimber, products other than logs, dead trees (personal use firewood), and other

vegetation management (OVM). Breaking TSPQ into its component parts, the forest sold 115% of the sawtimber, 105% of products other than logs, 80% of dead trees, and 174% of OVM.

Two years of special projects – Bench stewardship and ARRA fuels reduction – account for the volume sold being higher than projected. This level of treatment is not expected to continue into the future due to budget reductions and poor timber markets. However, personal use firewood sales have increased as the sawtimber market has weakened. The Roadless Area Conservation Rule (RACR) may also influence future timber output. Roughly 50% of the lands suitable for timber harvest is located within the RACR boundary and selling, cutting, or removing trees from those areas requires Department of Agriculture approval.

There are two mining operations on the forest and a third has recently had its plan of operations approved.

The forest continues to provide forage for domestic cattle, sheep, and horse grazing. There are currently 77 allotments on the forest with 92,955 AUMs for cattle, 11,559 AUMs for sheep, and 909 AUMs for horses.

Recreation education continued in 2010 with seven programs offered – from Leave No Trace training to Healthy Kids Day at the Buffalo YMCA. Recreation opportunities were discussed previously on page 4.

Maintaining or enhancing views of the forest along the two scenic byways was a component of five projects: realignment of the Bighorn Scenic Byway (U.S. Hwy 14), South Fork campground improvement, Shell Falls Wayside improvement, Johnson Creek vegetation management, and the Bench vegetation project in Shell Canyon. The forest also mapped areas where scenic integrity objectives are not being met.

Goal 3

Scientific & Technical Assistance

Assist tribes, communities, landowners, and citizens

The forest assisted natural resource-based businesses through grants and agreements which provided money to help them be more self sufficient. Forest

employees provided local communities with technical assistance when they were preparing community wildfire protection plans. The forest has also provided money to implement those plans.

Approximately \$126,000 were channeled to local communities and natural-resource-based businesses through grants and agreements. ARRA funds were awarded to two regionally located businesses to accomplish fuels treatments.

In the fire and fuels arena, the forest continues to support the Fort Washakie interagency helicopter program and meets with all four counties to coordinate fire suppression efforts. Forest employees also participate in wildfire training courses as instructors across the state at no cost.

In 2009, the Big Horn County Resource Advisory Committee (RAC) was established under the Secure Rural Schools Act. The forest helped the RAC develop operating guidelines and a process to review projects. The committee proposed fourteen projects to the forest for approval, and all projects were approved. They included campground toilet replacement, road maintenance, trail reconstruction, picnic ground maintenance, replacement of a water crossing, and natural resource education. The \$160,000 for these projects will be spent by September 30, 2012.

Seventy-five percent of the timber on the forest is sold through stewardship contracts. Local communities benefit from stewardship contracts because fuels are treated in areas identified in community wildfire protection plans, skilled woods workers are employed, and local companies keep skills and tools available for the future while providing economic stimulus to the local community.

Improve knowledge and understanding of ecosystems

Across the forest, data is collected for site-specific projects as well as for the monitoring items in chapter 4 of the forest

plan. Analysis of this information, whether annually or over a five- or ten-year span, adds to our knowledge base and expands our understanding of forest ecosystems.

Research and collaboration with partners are key parts of monitoring for this objective. The forest meets annually with WGFD and BLM to discuss upcoming projects and share information on fisheries, wildlife, livestock grazing, prescribed fire, timber management, sagebrush treatment, and willow sampling. The overall health of the Cloud Peak Wilderness ecosystem is monitored by tracking air and water quality in cooperation with WYDEQ and the Cloud Peak Chapter Wilderness Watch. Forest rangeland specialists continue to work with Dan Uresk (Rocky Mountain Research Station) to fine-tune Robel pole monitoring protocol to assess upland vegetation condition on the forest. In 2010, the forest worked with the Wyoming Department of Transportation (WYDOT) to evaluate impacts to a riparian area and to revegetate areas disturbed during WYDOT's highway realignment project.

Goal 4
Effective Public Service

Improve the safety and economy of roads, trails, facilities, and operations

Since 2005, the forest completed seven analyses that included travel management planning. Over 680 miles of road and trail were addressed, and various types of travel were analyzed,

including year-round and seasonal use. The analyses culminated in decisions that opened or closed roads to motorized use.

By implementing the RFA, the forest is providing recreation trail and facilities that are managed to standard. Several facility and infrastructure improvement projects were accomplished in 2010. These projects included South Fork Trail bridge, Lower Paintrock Trail bridge, 2 toilet facilities at South Fork campground, 1 toilet at Cabin Creek campground, 1 toilet at West Ten Trailhead, and reconstruction of the Porcupine Ranger Station Pump house and water systems. These new projects reduced forest deferred maintenance backlog by \$379,000.

The forest maintains ninety to one hundred percent of the level 3, 4, and 5 roads to standard and twenty-five percent of level 1 and 2 roads to standard. In 2010, the forest fully maintained ninety-eight percent (257 miles) of all level 3, 4, and 5 roads and thirty-six percent (102 miles) of level 1 and 2 roads.

Provide access

150,000 acres of the Bighorn National Forest do not have adequate public access, and private landowners continue to ask for legal access across the forest to their private

inholdings. The forest obtained a trail easement for the Soldier Creek Trail #15 in

2005, and is currently negotiating two other trail rights-of-way (ROWs) through state and private lands.

Pursue partnerships

Partnerships and agreements are essential for getting work done on the ground.

Cloud Peak Backcountry Horsemen contributed nearly 200 hours to trail maintenance and facility upkeep at Elgin Park trailhead. Cloud Peak Chapter Wilderness Watch volunteered more than 500 hours to trail maintenance projects and completion of the stream water quality reports.

Powder Pass Nordic Club completed its second winter of volunteer efforts on Nordic ski areas. The volunteers donated more than 400 hours to trail marking, clearing and packing projects. Volunteers provided over 4,000 hours to the management of the Powder River Ranger District efforts in 2007.

Wyoming Travel and Tourism paid for fabrication of interpretive signs at Shell Falls Wayside. The signs were designed and fabricated by the Forest Service and were installed in May 2010.

The forest meets annually with each county to review wildfire preparedness planning and response, including Cody Dispatch Zone operating procedures.

Validation Monitoring

Validation monitoring compares the assumptions in the forest plan against current conditions to see if everything still applies. This monitoring helps determine how the objectives and strategies are being

implemented and if the forest plan needs to be changed. Monitoring frequency varies depending on the resource – for some resources, the monitoring is annual; for others, there won't be enough information until 2015. These frequencies are also validated through monitoring and can change based on what is learned.

Goal 1 Ensure Sustainable Ecosystems

Improve or protect water and soil

The forest reviews the standards and guidelines in the forest plan to see if they are protecting, maintaining, or improving water quality, fish habitat, and soils. BMPs are part of the forest plan standards and guidelines, and they are reviewed and included in project design, as needed.

BMP reviews are conducted each year on randomly selected areas where management is occurring. In 2010, the forest did BMP reviews in the following grazing allotment pastures: Highpark, PK Horse, Sheep Trap, Sick, and Upper Cold Springs. In each review, the implemented BMPs were maintaining or helping to improve watershed conditions, and soils were not being degraded. Past BMP reviews for livestock grazing have shown the same results. There is no indication that forest plan standards and guidelines are not maintaining or improving aquatic habitats.

Provide habitat for emphasis species

In 2015, the forest will evaluate whether management strategies (goals, objectives, standards, guidelines) have improved status for species-at-risk and MIS.

In 2015, the forest will also report how site-specific projects have affected elk security.

Maintain or increase the amount of healthy forests and grasslands

Over the last five years, the forest has managed vegetation on approximately 69,720 acres using mechanical methods, prescribed fire, and managed fire. This is 146% of what was projected in the forest plan. The higher-than-projected treatment is not expected over the next five years due to anticipated reduced budgets.

Management to minimize insect/disease epidemics has produced mixed results. Tree removal through thinning and other means is used as a surrogate to measure this monitoring item. The Douglas-fir bark beetle populations were so high tree harvest did not deter the infestation. The spruce bark beetle treatment was more effective because the infestations were more isolated.

Goal 2 Multiple Benefits to People

Our validation monitoring for this objective is two-fold: an inventory of lands suitable for timber production (suited lands) and an assessment of whether livestock grazing standards and guidelines are maintaining or improving conditions in riparian sites and upland vegetation sites. Both will be reported in 2015.

Provide sustainable levels of uses, values, products, and services.

is two-fold: an inventory of lands suitable for timber production (suited lands) and an assessment of whether livestock grazing standards and guidelines are maintaining or improving conditions in riparian

Goal 3 Scientific & Technical Assistance

Improve knowledge base and understanding of ecosystems.

The forest will use all available data to validate stand condition standards and guidelines in the forest plan, including the forest plan inventory of lands suitable for timber production. The monitoring requires a longer frequency and will be reported in 2015. Other aspects of this objective are the forestwide biodiversity and scenery guidelines which will also be validated in 2015.

Conclusion

Since 2005, there have been court decisions and changes to the economy that affected the way we managed the forest. Despite these unforeseen complications, a comparison of our desired condition for the forest in the short-term (10 years) with our 2010 monitoring data and five-year review shows we are on track:

- We have used various tools (timber harvest, vegetation treatments, prescribed fire) to change the landscape, but the changes have been small. The largest landscape changes, as predicted, have come from natural events: wildland fire and insect and disease epidemics.
- The aspen on the forest occurs in small pockets, and we are managing them to reduce conifer encroachment.
- Most of the non-forested areas of the forest are meeting or moving toward desired condition and are being managed

for a mix of seral stages and species. Noxious weeds are an ongoing challenge, but through cooperative agreements, we are working to curb expansion.

- Some high-value areas and areas identified in community wildfire protection plans have been treated to reduce fuel loads and are less susceptible to severe fires.
- We are maintaining processes and structures on the forest to protect riparian and wetland areas and to provide habitat for TES and non-TES species. We are improving aquatic habitat and hydrologic and riparian function through travel management, by actively and adaptively managing livestock grazing, by implementing BMPs, and by doing watershed improvement projects.
- The character and qualities of the forest that attract visitors are being retained. Summer and winter visitors can enjoy the full spectrum of recreation opportunities from primitive to developed and nonmotorized to motorized. At the same time, we are removing roads and trails that are not needed or that are damaging other resources, and we are closing or converting some developed campgrounds if we cannot maintain them so they are safe to use.
- Special areas of the forest – wild and scenic rivers, research natural areas, wilderness – are providing historical, biological, and scenic values.
- The forest is producing a sustainable flow of some forest products and commodities including Christmas trees, firewood, and forage for livestock. Collaboration with local communities to develop projects and programs is very much a part of how we do business.

- We are actively working to improve human safety and protect properties and communities by incorporating community wildfire protection plans into our fire and fuels projects on the forest.
- In our management of forested vegetation, we are working toward more acres of early structural stages (young trees) and fewer acres of intermediate structural stages in some areas. In other areas, natural processes are the driving force shaping forested vegetation.

In the next five years, we will continue to monitor and evaluate our progress and achievements in the areas listed above. In 2015, our review will include validating the accuracy of our suitable timber inventory, which could change the amount of timber offered for sale from suited lands (the ASQ).

We will assess trends in aquatic conditions to determine if we are maintaining habitat for dependent species and we will evaluate status and trends for MIS and species at risk.

We will compare the amount of old growth on the forest with desired amounts as a measure of healthy vegetation communities on the forest. To better understand our forest ecosystem and improve decision-making and management, we will review our inventory and analysis plots and FS Veg data and validate what we said we wanted for timber stand conditions, snags, coarse woody debris, old growth, etc. We will also assess whether our livestock grazing standards and guidelines are protecting or improving upland and riparian vegetation.

Forest plans are meant to be living documents that change and improve over time. Monitoring and evaluation are the tools with which we accomplish those changes and improvements. Through them, we can adjust our course to account for environmental and social changes, and we can incorporate advances in science and technology. The result is a forest plan that effectively guides our day-to-day management of the Bighorn National Forest.