

## Chapter 4

# Monitoring and Evaluation

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## Introduction

Monitoring and evaluation to determine how well the Forest Plan is working is required by National Forest Management Act (NFMA) regulations. Monitoring and evaluation must be designed to answer the following basic questions:

- **Did we do what we said we were going to do?** This question answers how well Forest Plan direction is being implemented. Collected information is compared to objectives, standards, guidelines, and management area direction.
- **Did it work how we said it would?** This question answers whether objectives are achieving goals and how closely standards and guidelines are being applied.
- **Is our understanding and science correct?** This question answers whether the assumptions and predicted effects used to formulate goals and objectives are valid.

The aim of monitoring is adaptive management – the ability to respond to current conditions or make appropriate changes based on new information or technology. Depending on the answers to the above questions, the Forest Plan may be amended or revised to adapt to new information or changed conditions. This chapter provides programmatic direction for monitoring and evaluating Forest Plan implementation.

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## Monitoring Strategy

Monitoring and evaluation are separate activities. Data and information are collected by various means. Then they are analyzed and interpreted to evaluate the success of Forest Plan implementation. To provide the public with timely, accurate information regarding this process, the Forest releases an annual monitoring and evaluation report.

The monitoring program must be efficient, practical, and affordable, and not duplicate data collection already underway for other purposes.

Monitoring tasks are scaled to the Forest Plan, the program, or the project to be monitored. Each of these entails different objectives and

requirements. Monitoring is not performed on every single activity, nor does it need to meet the statistical rigor of formal research.

Budgetary constraints will affect the level of monitoring that can be done in a particular fiscal year. If budget levels limit the Forest’s ability to perform all monitoring tasks, then those items specifically required by NFMA are given the highest priority.

The components of this monitoring strategy are:

- Monitoring methods
- Monitoring questions related to implementation, attainment, and assumptions
- The annual monitoring plan of operations
- The annual monitoring evaluation report.

**Table 4 - 1. Monitoring Strategy**

Monitoring Methods	Monitoring Questions	Annual Monitoring Plan	Monitoring and Evaluation Report
Monitoring methods categorize how precisely and reliably monitoring items are measured.	Monitoring questions are developed by an interdisciplinary team to address Forest Plan management goals, objectives, standards, guidelines, assumptions, and science.	The annual monitoring plan of operations identifies which items will be measured and how monitoring questions are to be answered.	The monitoring and evaluation report analyzes and summarizes the monitoring results.

## Monitoring Methods

Monitoring is divided into two methods, A and B, based on their relative precision and reliability.

### Method A

Methods generally are well accepted for modeling or measuring the resource or condition. The cost of conducting these measurements is higher than other methods. These methods are often quantitative in nature.

### Method B

Methods or measurement tools are based on a variety of techniques. Tools include project records, communications, on-site ocular estimates, or less formal measurements such as pace transects, informal visitor surveys, air photo interpretation, and other similar types of assessments. Reliability, accuracy, and precision are good, but usually less than with Method A. Method B monitoring is often qualitative in nature, but can still provide valuable information on the status of resource conditions.

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## Monitoring Questions

A series of monitoring questions have been formulated to determine the effectiveness of Forest Plan implementation, attainment, and assumptions. These questions are displayed in Table 4 - 2. They address the Forest-wide goals and objectives found in Chapter 2. Monitoring methods used to gather information about each question will be identified in the annual monitoring plan.

The purpose of monitoring questions is to determine what type of information to gather and how often to gather it in order to assess progress toward attaining goals and objectives. Some resources need to be monitored annually to produce trend data. Annually gathered data may be analyzed periodically (3, 5, or 10-year cycle), depending upon the time frame specified by each objective.

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## Annual Monitoring Plan of Operations

A monitoring plan will be prepared each year to identify specific items for monitoring in the coming year as well as the methods to be used. The interdisciplinary team will review the monitoring items annually to prioritize monitoring activities and develop a monitoring plan, the following items will be considered:

- Additional data needs identified from previous monitoring activities
- Methods and measures to provide consistent information to determine trends
- Assessment of benefits versus the cost of collecting data
- The amount of process and statistical rigor needed to obtain usable results
- The intensity, detail, and type of data needed to achieve the monitoring purpose
- The importance of the item or activity being monitored (potential for long-term or irreversible damage, local versus national risk, risk of not monitoring, etc.)
- Emerging issues and concerns that may be addressed through monitoring.

The annual monitoring plan will identify and schedule various site-specific, on-the-ground monitoring activities. It should describe the purpose, methods, locations, responsible persons, and estimated costs. Each annual plan must be submitted for consideration under the budget and work planning process.

The Forest Supervisor then will determine the appropriate funding for monitoring and approve implementation of the monitoring plan.

Specific components included in the annual monitoring plan of operations are:

- **Forest Plan Goal:** As identified in Chapter 2.
- **Forest Plan Objectives:** As identified in Chapter 2.
- **Monitoring Questions:** An interdisciplinary team is to review specific monitoring questions from Table 4 - 2. This review ensures that the information gathered answers the questions that are essential to measuring Forest Plan accomplishment and effectiveness and is consistent with budget and work plans.
- **Monitoring Items:** A monitoring item, or data element, is a quantitative or qualitative parameter that can be measured or estimated. One or more monitoring items are associated with each monitoring question. Monitoring items provide the foundation to answer the monitoring questions.
- **Monitoring Purpose:** This component indicates the monitoring item's purpose. It notes whether it is a legal requirement and/or whether it provides information for better land management decisions.
- **Methods:** Precision and reliability as well as specific techniques are described.
- **Scale:** Describes the level of analysis with respect to land size. This measure helps clarify habitat heterogeneity and viability issues. It also describes cumulative effects of management actions.
- **Frequency of Monitoring:** Describes how often information is gathered or measured: annually, every three to five years, or every 10 years.
- **Frequency of Evaluation:** Defines how often information is analyzed and reported. Depending upon the question being answered, analysis of the information may occur at intervals greater than the frequency of monitoring.

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## Annual Monitoring and Evaluation Report

Developed by the interdisciplinary team, the annual monitoring and evaluation report summarizes the results of completed monitoring and evaluates the data. Evaluation determines whether observed changes are consistent with the Forest Plan's desired future conditions, goals, and objectives and if adjustments may be needed. The report also makes recommendations to the Forest Supervisor who will use these findings either to certify the Forest Plan as sufficient for management in the coming year or to decide that a Plan amendment is needed.

The monitoring and evaluation report may provide summaries of data collected, but it primarily displays data evaluation, conclusions, and recommendations. Comparison of subsequent monitoring and evaluation reports provides a means of tracking management effectiveness from year to year. It also shows changes that have been made or are still needed.

Key questions to be addressed in evaluations include:

- Are management direction and standards being followed?
- How well are objectives of the Plan being achieved?
- Do management prescriptions respond to issues, concerns, and opportunities?
- Are effects of Plan implementation occurring as predicted?
- Is the Forest progressing toward its long-term goals?

In summary, the annual monitoring and evaluation report:

- Reviews the results of monitoring
- Assesses the effectiveness of management practices in achieving goals, objectives, and desired conditions (outcomes) specified in the Plan
- Compares actual outputs, services, and costs with those estimated in the Plan
- Evaluates data for indicators of trends or effects
- Identifies any need to amend or revise the Plan
- Identifies research needed by the National Forest System.

Table 4 - 2. Monitoring Questions.

Goal	Objective	Monitoring Questions	Monitoring Frequency	Evaluation Frequency	Precision/Reliability
2.1 – Restore water quality and soil productivity to improve health of watersheds impaired by past land use practices and mining activities. Manage activities on NFS land to maintain or enhance water quality and soil productivity.	2.1a – Restore the dimension, pattern, and profile of streams where channel and floodplain morphology has been altered.	How many miles of stream have been treated to restore dimension, pattern, and profile?	Every 5 years	Every 5 years	B
	2.1b – Enhance water quality in the Monday Creek, Sunday Creek, Symmes Creek, Raccoon Creek, and Pine Creek watersheds by reducing acid mine discharges and decreasing sediment loads.	What is the current geo chemistry profile of these creeks?	Annually	Every 5 years	A
		What geo chemistry parameters have changed by reducing and/or treating acid mine discharges?	Annually	Every 5 years	A
		How many acid mine discharges have been treated?	Every 5 years	Every 10 years	B
		How many subsidence features have been treated?	Every 5 years	Every 10 years	B
		How many miles of stream have free-flowing water where surface flow was restricted?	Every 5 years	Every 10 years	B
3.1 – Promote healthy riparian and aquatic ecosystems that sustain ecological processes and functions and a variety of plant and animal communities, including viable populations of native and desired non-native species.	3.1a – Restore wetland habitat where wetland hydrology, soils, or vegetation have been modified by past land uses.	How many acres of wetland habitat was restored or enhanced?	Annually	Every 5 years	B
	3.1b – Improve habitat along streams for aquatic and riparian-dependent species.	How many miles of stream were treated to improve or restore habitat for aquatic and riparian-dependant species?	Every 5 years	Every 5 years	B
		How many permanent long-term aquatic ecological unit monitoring sites were established?	Annually	Every 5 years	B
		What physical or biotic parameters have changed at the permanent long-term aquatic ecological monitoring sites?	Each site is on a 3-year rotation	Every 10 years	A

Goal	Objective	Monitoring Questions	Monitoring Frequency	Evaluation Frequency	Precision/Reliability
	3.1c – Reduce sedimentation and improve passage for aquatic and semi-aquatic organisms at Forest development roads and Forest Service recreation trail crossings.	What is the current number of Forest Development Road crossings and recreational trail crossings on NFS land?	Every 5 years	Every 5 years	B
		How many crossings were improved?	Every 5 years	Every 5 years	B
		How many crossings were eliminated?	Every 5 years	Every 5 years	B
	3.1d – Improve aquatic habitat in ponds and lakes.	How many ponds or lakes were treated to improve aquatic habitat?	Every 5 years	Every 5 years	B
4.1 – Promote healthy terrestrial ecosystems that sustain a variety of plant and animal communities, including viable populations of native and desired non-native species.	4.1a – Provide adequate habitat to support viable populations of Management Indicator Species.	Are population trends and habitat trends of management indicators consistent with Forest Plan expectations?	Annually	Every 5 years	AB
		What is the relationship between habitat and population trends?	Every 5 years	Every 5 years	AB
	4.1b – Promote restoration and maintenance of the oak-hickory ecosystem by improving conditions for oak regeneration in the Historic Forest and HFO Management Areas.	How many acres were treated to encourage oak regeneration?	Annually	Every 5 years	B
	4.1c – Encourage the establishment of all-aged hardwood forest and hardwood-pine forest communities with structurally diverse canopy layers to maintain forest health and increase structural diversity.	How many acres of hardwood or hardwood/pine forest communities were treated to encourage the establishment of all-aged conditions?	Annually	Every 5 years	B
	4.1d – Create early successional hardwood or hardwood-pine habitat, interspersed within mid- and late-successional forest habitat to: provide breeding habit for shrubland-dependent species and increase production of wildlife foods such as soft and hard mast and insects.	How many acres of early successional forest habitat were created?	Annually	Every 5 years	B

Goal	Objective	Monitoring Questions	Monitoring Frequency	Evaluation Frequency	Precision/Reliability
	4.1e – Regenerate existing native pine and pine-hardwood mixed communities.	How many acres of pine or pine-hardwood communities were treated?	Annually	Every 5 years	B
	4.1f – Annually, improve or maintain 5 to 10 percent of the existing grassland and grassland/shrubland habitat acreage in the Grassland Management Area.	How many acres of grassland habitat were improved or maintained?	Annually	Every 5 years	B
	4.1g – Establish and maintain permanent forest openings (herbaceous vegetative cover or mix of herbaceous vegetation and shrubs) on a variety of sites, including ridge tops, mid-slope benches and valley bottoms, preferably where access by machinery is possible.	How many acres of herbaceous or herbaceous-shrub habitat were created?	Annually	Every 5 years	B
		How many acres of herbaceous or herbaceous-shrub habitat were maintained?	Annually	Every 5 years	B
	4.1h – Construct waterholes and ephemeral wetlands to supplement limited water sources, enhance local biodiversity, and enhance aquatic insect production.	How many waterholes or ephemeral wetlands were constructed or enhanced?	Annually	Every 5 years	B
	4.1i – Install artificial nesting or roosting structures to supplement natural cavities or snags when they are short in supply or to enhance wildlife-viewing.	How many artificial nesting structures were installed?	Annually	Every 5 years	B

Goal	Objective	Monitoring Questions	Monitoring Frequency	Evaluation Frequency	Precision/Reliability
5.1.1 – Retain or develop Indiana bat roosting and foraging habitat; protect all known Indiana bat hibernacula.	5.1.1a – If additional Indiana bat hibernacula are discovered on NFS land, install bat-friendly gates to prevent unauthorized entry.	How many acres of potentially suitable Indiana bat habitat were protected or improved?	Annually	Every 5 years	B
		How many bat-friendly gates were installed on known Indiana bat hibernacula?	Annually	Every 5 years	B
5.1.2 – Moved to 5.2.1; See Note 1 page 2-24 <sup>1</sup>					
5.1.3 – Cooperate in efforts to reintroduce the American burying beetle.		What cooperative efforts were accomplished to achieve the reintroduction of the American burying beetle?	Annually	Every 5 years	B
5.1.4 – Actively manage known populations of running buffalo clover to maintain appropriate habitat conditions.	5.1.4b – Conduct annual monitoring of known running buffalo clover populations and adjacent areas to identify potential risks or management needs.	Where there any changes to known running buffalo clover populations and were any potential risks identified and mitigated?	Annually	Every 5 years	B
5.2.1 – Protect bald eagle communal night roosts, daytime concentration sites, and occupied breeding territories. <sup>1</sup>	5.2.1a – Conduct a minimum of three annual winter searches to locate any previously unknown communal night roosts or bald eagle concentrations.	How many mid-winter bald eagle searches were conducted?	Annually	Every 5 years	A
		How many bald eagles were observed?	Annually	Every 5 years	A
6.1 – Provide forest vegetation characteristics, from understory layers to the tree canopy, that meet the habitat needs of desired native and non-native plant and animal species.	6.1a - Use all available silvicultural treatments, including pre-commercial and commercial thinning, prescribed fire, shelterwood harvests, and improvement cutting to promote the maintenance and restoration of the oak-hickory ecosystem.	How many acres are being treated with varying management actions that will likely result in the maintenance and restoration of the oak-hickory ecosystem?	Annually	Every 5 years	B
	6.1b - Use commercial timber sales and stewardship contracts to accomplish wildlife habitat objectives.	How many acres are being treated through commercial timber sale operations and / or stewardship contracts that will likely meet the objectives of improving wildlife habitat?	Annually	Every 5 years	B
6.2 – Reintroduce fire into fire-adapted ecosystems to conserve biodiversity and promote ecosystem structure and function closer to the historic range of variability.	6.2a – Use prescribed fire to conserve fire-adapted plant and animal biodiversity and to maintain and restore mixed oak and native pine ecosystems.	How many acres are being treated with prescribed fires that will likely conserve fire-adapted plant and animal biodiversity, and to maintain and restore mixed oak and native pine?	Annually	Every 5 years	B

<sup>1</sup> Goal 5.1.2 Changed on 10/16/2008 by Administrative Correction # 3

Goal	Objective	Monitoring Questions	Monitoring Frequency	Evaluation Frequency	Precision/Reliability
	6.2b – Use prescribed fire and mechanical treatments to modify current fuel composition, and fire frequency, severity and pattern.	How many treated acres improved fire regime condition class?	Every 5 Years	Every 5 Years	B
	6.2c – Use prescribed fire and mechanical treatment to maintain a current fire regime condition class that represents a historic range of variability.	Has the fire regime been maintained in the desirable condition class?	Every 5 Years	Every 5 Years	B
6.3 – Provide opportunities for the collection and use of special forest products. Manage removal of special forest products and monitor this use to sustain viable populations and future yields. Increase public awareness of special forest product harvesting impacts on populations and their ecosystems.		How many permits are issued and what are the reported harvests in each year? Are yields per permit increasing or decreasing?	Annually	Every 5 Years	B
		What are trends of ginseng plant size and distribution on NFS land?	Every 3-5 Years	Every 10 Years	A

Goal	Objective	Monitoring Questions	Monitoring Frequency	Evaluation Frequency	Precision/Reliability
<p>7.1 – Limit the effects of insects and diseases on forest vegetation and wildlife to within the range of disturbances that occurred in forest ecosystems prior to the arrival of non-native insects and diseases. Manage non-native invasive species (NNIS) populations using prevention, suppression, and restoration techniques to protect and restore natural communities on the Forest.</p>	<p>7.1a – Maintain an inventory of NNIS insects and diseases affecting or potentially affecting NFS resources.</p>	<p>How many acres of the Forest is inventoried for NNIS insects and diseases and when was it inventoried?</p>	<p>Annually</p>	<p>Every 5 years</p>	<p>A</p>
	<p>7.1b – Cooperate with the ODNR and the State and Private Forestry Division of the Forest Service to suppress insect populations to:</p> <ul style="list-style-type: none"> <li>• Retard advance of the gypsy moth</li> <li>• Eradicate NNIS species that are present but not yet well established, such as the emerald ash borer.</li> <li>• Prevent the spread of non-native species currently lacking natural controls.</li> <li>• Protect populations of, or habitat for, endangered, threatened, or sensitive species.</li> <li>• Protect rare communities likely to be severely impacted by insect outbreak.</li> <li>• Prevent extensive tree mortality or defoliation in developed recreation areas and other areas where maintaining visual quality is a major objective.</li> <li>• Prevent spread onto land or into high value areas of the Forest (e.g., rare communities, developed recreation areas).</li> <li>• Prevent the introduction and spread of sudden oak death syndrome.</li> </ul>	<p>How many NNIS sites were treated and how did the populations respond to treatment?</p>	<p>Annually</p>	<p>Every 5 years</p>	<p>A</p>

Goal	Objective	Monitoring Questions	Monitoring Frequency	Evaluation Frequency	Precision/Reliability
	7.1c Protect the Forest from wildfire by: <ul style="list-style-type: none"> <li>• Treating hazardous fuels that present a high risk of wild fire.</li> <li>• Treating hazardous fuels to move the forest closer to desired fire regime condition class and desired future condition.</li> <li>• Maintaining areas that are at the desired fire regime condition class</li> </ul>	How many acres of hazardous fuels were treated?	Annually	Annually	B
7.2 – Manage NNIS populations using prevention, suppression, and restoration techniques to protect and restore natural communities. Emphasize prevention of spread and early detection of and rapid response to new infestations. Improve effectiveness of NNIS prevention practices through public and inter-agency NNIS awareness and education.	7.2a – Maintain and update an inventory of NNIS plant populations on NFS land. Include information on adjacent lands as gathered in cooperation with neighboring landowners.	How many acres of the Forest are inventoried for NNIS plants and when were these inventoried?	Annually	Every 5 years	A
		What is the effect of prescribed fire on NNIS?	Annually	Every 5 years	B
	7.2b – Treat and reduce populations of non-native invasive plant species with high potential for spread. Implement control treatments of infestations that threaten priority resources. Prioritize treatment areas based on risk of spread, threat to resources, likelihood of successful control/containment, and partnerships.	How many NNIS sites were treated and how did the NNIS populations respond to treatment?	Annually	Every 5 years	A
7.3 – Manage NNIS populations using prevention, suppression, and restoration techniques to protect and restore natural communities in NFS waters. Emphasize prevention of spread and eradication of small populations/areas of infestation. Improve effectiveness of NNIS prevention practices through public and inter-agency NNIS awareness and education.		How many NNIS awareness and education events were given?	Annually	Every 5 years	B

Goal	Objective	Monitoring Questions	Monitoring Frequency	Evaluation Frequency	Precision/Reliability
7.4 – Re-establish populations of native vegetation (e.g., American chestnut, American elm), as disease resistant varieties become available.		How many acres of native vegetation (eg American Chestnut, American Elm) as disease – resistant varieties have been re-established?	Annually	Every 5 years	B
8.1 – Safely implement the fire and fuels program of the Wayne National Forest. Promote State and Federal interagency cooperation in wildland fire and fuels management.	8.1b – Safely extinguish wildland fires using ground and/or air resources.	Number of wildfires suppressed with no reportable accidents/injuries or damage to private property. Number of acres of private property burned from fires with ignition on Forest Service land.	Every Wildfire	Annually	B
	8.1c – Reduce hazardous fuels within communities at risk in cooperation with local, State, and Federal agencies.	Number of acres in WUI treated for hazardous fuels reduction. Number of prescribed burns conducted in cooperation with local, state or other federal agencies.	Annually	Annually	B
	8.1e – Provide training to local volunteer fire departments in wildland fire suppression.	How many local volunteer fire departments were trained in wildland fire suppression?	Annually	Annually	B
10.1 – Provide a supply of mineral commodities for current and future generations, while protecting the long-term health and biological diversity of ecosystems. Facilitate the orderly exploration, development, and production of mineral and energy resources on land open to these activities.	10.1a – Coordinate with the Bureau of Land Management to offer leases of federally owned minerals.	Are expressions of interest and lease offers processed in a timely manner? <sup>1</sup>	Annually	Every 5 Years	B
	10.1b – Process plans of operation/applications for permit to drill on Federal leases in a timely manner.	How many plans of operation/applications for permit to drill on Federal leases were processed in a timely manner?	Annually	Every 5 years	B
10.2 – While respecting privately held mineral rights, negotiate operating terms and conditions and mitigation measures to protect other Forest resources.	10.2a – Process plans of operation (and applications for major modifications) for privately owned minerals (reserved and outstanding rights) within 60 days.	How many applications were processed within 60 days?	Annually	Every 5 years	B
	10.2b – Restore lands disturbed by minerals exploration and production when the minerals activity is completed.	How many mineral activities were adequately restored upon completion?	Annually	Every 5 years	B

<sup>1</sup> Monitoring question corrected 10/16/2008 by Administrative Correction # 1

Goal	Objective	Monitoring Questions	Monitoring Frequency	Evaluation Frequency	Precision/Reliability
	10.2c – Plug wells when producing ceases.	How many wells were plugged according to State regulations when production ceases?	Annually	Every 5 years	B
11.1 – Provide a broad range of developed and dispersed outdoor recreation opportunities and experiences within the ecosystem’s acceptable limits of change. Manage recreation facilities and opportunities to respond to public demands and promote local economic development. Emphasize recreation opportunities which can be better provided on the Forest than on private or other public land.	11.1a – By the end of this planning period, add at least one camping facility for OHV use and one for equestrian use. This could be accomplished by the Forest Service or concessionaire on NFS land or by the private sector on adjacent private property.	Is there a broad range of high quality, outdoor recreation opportunities being provided and is the Forest responsive to visitor demands/needs?	Every 5 years	Every 5 years	A

Goal	Objective	Monitoring Questions	Monitoring Frequency	Evaluation Frequency	Precision/Reliability
11.2 – Construct and maintain trails and associated facilities to provide a safe and quality experience within the capabilities of the land and appropriate to the management area.	11.2b – By the end of this planning period, relocate/re-construct five miles of the North Country Trail where the trail is currently located on roads.	How many miles of NCT have been relocated/reconstructed off existing roads?	Annually	Every 5 years	B
	11.2c – Maintain and administer the Forest's motorized trail system to provide safe/enjoyable trail riding opportunities and reduce resource impacts.	How many miles of motorized trails have been maintained to standard (annual routine and deferred maintenance)?	Annually	Every 5 years	B
	11.2d – Where maintenance methods prove ineffective and monitoring confirms unsafe conditions or unacceptable resource damage, close and rehabilitate and/or relocate/reconstruct sections of OHV trails.	How many miles of motorized trails have been closed and rehabilitate and/or relocated/reconstructed due to unsafe conditions or unacceptable resource damage sections from OHV use?	Annually	Every 5 years	B
	11.2e – Reduce and strive to eliminate illegal OHV use by: <ul style="list-style-type: none"> <li>• Prohibiting cross-country travel or riding on undesignated user-created trails.</li> <li>• Prohibiting riding on trails designated for other uses.</li> <li>• Prohibiting riding on designated trails during closed seasons</li> <li>• Closing at least 20 miles illegal OHV trail within the next decade to: <ol style="list-style-type: none"> <li>a) Protect Federally listed species</li> <li>b) Protect Regional Forester's sensitive species</li> <li>c) Improve watershed health.</li> </ol> </li> </ul>	Have sections of illegal trails on the Forest been closed and rehabilitated? If so, how many miles and where?	Annually	Every 5 years	B

Goal	Objective	Monitoring Questions	Monitoring Frequency	Evaluation Frequency	Precision/Reliability
	11.2f – Maintain the Forest’s non-motorized trail system to provide safe/enjoyable trail hiking, horseback riding, and biking opportunities with minimal resource impacts.	How many miles of non-motorized trails have been maintained/reconstructed to standard?	Annually	Every 5 years	B
	11.2g – Construct new trails during the next 10 to 15 years within the ranges and densities shown in Table 2 - 1.	How many miles of new motorized and non-motorized trails have been constructed?	Annually	Every 5 years	B
12.1 - Maintain or enhance the quality of scenic resources to provide desired landscape character.		Is the Forest being managed in accordance with the assigned SIOs and scenery guidelines found in the Forest Plan?	Annually	Every 5 years	
13.1 – Provide current and future generations the opportunity to experience and appreciate the Forest’s diversity of human history and the relationship between people and the land.	13.1c – Reduce the backlog of heritage sites that require formal evaluation for eligibility to the National Register of Historic Places.	How many heritage sites have been evaluated for National Register eligibility?	Annually	Every 5 years	B
	13.1d – Develop management plans for the long-term preservation of heritage resources that are either listed on or eligible for the National Register of Historic Places.	How many management plans have been developed for heritage sites that are either eligible for or listed on the National Register of Historic Places?	Annually	Every 5 years	B

Goal	Objective	Monitoring Questions	Monitoring Frequency	Evaluation Frequency	Precision/Reliability
14.1 – Adjust land ownership within the Forest proclamation boundary to enhance public benefits and improve management effectiveness.	14.1a – Purchase, exchange, accept donations, or convey lands and mineral rights on a willing seller, willing buyer basis. Give high priority to acquisition of land that will: <ul style="list-style-type: none"> <li>• Consolidate National Forest ownership</li> <li>• Provide access to NFS lands and waters</li> <li>• Protect or enhance threatened and endangered species habitat, sensitive species, heritage resources, or other special areas</li> <li>• Provide opportunities for the creation, expansion or management of wetlands, lakes and ponds, or for recreational facilities</li> <li>• Eliminate or correct sources of water pollution</li> <li>• Consolidate surface and mineral estates</li> <li>• Enhance opportunities for local community development.</li> </ul>	Does the Forest's land-base progress toward consolidation that meets objectives by exchange, purchase or donation?	Annually	Every 5 years	A & B

Goal	Objective	Monitoring Questions	Monitoring Frequency	Evaluation Frequency	Precision/Reliability
	14.1b – Acquire rights-of-way or property to improve access to NFS land.	How many miles of right-of-way, or parcels of land, have been acquired to facilitate access to NF tracts?	Annually	Every 5 years	A
	14.1c – Foster good neighbor relations with local communities by: <ul style="list-style-type: none"> <li>• Not acquiring land that communities identify as having high potential for development or that is prime farmland</li> <li>• Considering land exchanges that provide opportunities for development of local communities and their economies</li> </ul>	How many Special Use permits were authorized and re-authorized to allow local community developments on NFS lands?	Annually	Every 5 years	A
	<ul style="list-style-type: none"> <li>• Facilitating special use authorizations for utilities services to local communities within and near NFS ownership</li> <li>• Co-locating Forest Service and local community-service communication facilities.</li> </ul>	How many acres of prime farmland or acres of land with high potential for community development have been purchased?	Annually	Every 5 years	B
14.2 – Maintain boundary lines.	14.2a – Survey and post landlines not currently marked. Maintain lines previously marked on a 10-year cycle.	Is the Forest making progress towards the eventual marking and maintaining of the entire perimeter of NFS lands against private property?	Annually	Every 5 years	A
	14.2b – Resolve trespass/encroachment situations.	Is the Forest making progress toward resolving trespasses as they occur and are discovered?	Annually	Every 5 years	A
15.1 – Consider authorization for special uses that: <ul style="list-style-type: none"> <li>• Serve the public</li> <li>• Promote public health and safety</li> <li>• Protect the environment</li> <li>• Cannot be reasonably accommodated on private land.</li> </ul>		Is the Forest considering and processing reasonable requests for special use authorizations on NFS lands?	Annually	Every 5 years	A

Goal	Objective	Monitoring Questions	Monitoring Frequency	Evaluation Frequency	Precision/Reliability
16 – Permit livestock grazing to: <ul style="list-style-type: none"> <li>Facilitate land acquisition by permitting current use by livestock</li> <li>Contribute to wildlife habitat objectives</li> <li>Help control non-native species.</li> </ul>		How many parcels of land were acquired in the current year that were being grazed by livestock within approximately one year prior to acquisition by the Forest Service? If there are any parcels, how many? And are they still being grazing, or being offered for grazing?	Annually	Every 5 years	B
		How many acres were grazed and contributed to wildlife habitat objectives; and how many acres were grazed to control non-native species?	Annually	Every 5 years	B
17.1 – Provide safe, efficient facilities and related structures that meet the needs of Forest visitors.	17.1a – Conduct detailed inspections of facilities every five years, more often if needed.	How many administrative and recreation facilities meet current safety, mission, niche, and use requirements?	Every 5 years	Every 5 years	B
	17.1b – Decommission facilities that are no longer needed.				
17.2 – Maintain dams as safe and effective water storage facilities.	17.2a – Maintain dams to standard.	How many Forest dams meet current State and Federal regulations with respect to storage capacity, storm routing, spillway capacity, and general dam safety?	Annually for High Hazard	Annually for High Hazard	A
	17.2b – Inspect high hazard dams annually.				
	17.2c – Decommissioned or appropriately dispose of dams no longer needed.				
17.3 – In cooperation with local, State, and Federal government agencies, provide a safe, efficient transportation system for moving people, equipment, and forest products.	17.3a Reduce sedimentation and improve passage for aquatic and semi-aquatic organisms at Forest development road and Forest Service recreation trail crossings.	How many stream crossing were inventoried and/or corrected for sedimentation production?	Every 5 years	Every 10 years	A
	17.3b – Decommission temporary and system roads when they are no longer needed for administration of the Forest or its resources.	How many miles of roads were evaluated to determine maintenance, storage, or decommission needs?	10 years, or when Mgmt. activities impact a road	Every 10 years	B

Goal	Objective	Monitoring Questions	Monitoring Frequency	Evaluation Frequency	Precision/Reliability
	17.4c – Maintain all roads in a condition that protects the government’s investment. If funds do not allow for regular preventive maintenance, close roads or restrict traffic to protect resources or investment.	How many miles of road are maintained to the level of service required, and how often is needed maintenance performed and are the roads environmentally stable?	An average of 20% of Level 3-5 roads inspected annually  Visual review of 50% of Level 2 roads annually.  Level 1 roads every 10 years.	Every 5 years	A B
	17.4d – Maintain at maintenance level 3, or higher, roads intended for passenger vehicles.				
	17.4e – Maintain at maintenance level 2 roads intended for high clearance vehicles.				
	17.4f – Maintain at Maintenance Level 1 roads that are closed to public travel.				
	17.4g – Remove hazard trees along Forest development roads from Sept. 15 through April 15.				
18.1 Highly trained, equipped, and visible law enforcement officers and forest personnel contribute to safe and enjoyable experiences for visitors. Effective law enforcement protects public and employee safety, and public property.	18.1a - Prevent violations of law through: <ul style="list-style-type: none"> <li>• Education</li> <li>• Information and regulatory signing</li> <li>• Improved facilities</li> <li>• Effective citing and prosecution of violations</li> <li>• Public notice of prosecutions and penalties</li> <li>• Presence of uniformed Forest Service personnel</li> <li>• Working with cooperating agency law enforcement officials at times and locations of heavy public use.</li> </ul>	How many prevention activities were performed?	Annually	Annually	B

Goal	Objective	Monitoring Questions	Monitoring Frequency	Evaluation Frequency	Precision/Reliability
	18.1b - Focus law enforcement efforts on Forest priorities to reduce incidence of: <ul style="list-style-type: none"> <li>• Illegal OHV use</li> <li>• Arson Fires</li> <li>• Trespass and timber theft</li> <li>• Trash dumping</li> </ul>	How many incidence of illegal OHV use, arson Fires, trespass and timber theft, and trash dumping were reported?	Annually	Annually	B
	18.1c – Establish cooperative law enforcement agreements with State and Local agencies. Review and adjust cooperative law enforcement (CLE) agreements every five years. Annually review and adjust operating plans developed under these agreements.	How many agencies does the Forest have agreements with?	Annually	Annually	B
	18.1d - Report violations of laws and regulations.	How many violations were reported?	Annually	Annually	B
18.2 – Prevent contamination of National Forest soil, water, and air resources.	18.2a – Ensure that water supplies and wastewater facilities meet relevant State and Federal laws.	Were the appropriate water quality tests performed?	Annually	Annually	A
Standards and Guidelines Compliance (No specific enumerated Goal)		Did any project require guideline modification or a Forest Plan amendment to modify a standard?  If so: What was the project? Which standard or guideline was changed? and What was the rationale for the change?	Annually	Annually	B

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