



United States  
Department of  
Agriculture

Forest Service

Eastern Region

Hoosier  
National  
Forest

July 2007



# Monitoring and Evaluation Guide



*Caring for the Land and Serving People*

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## Introduction

Monitoring and evaluation are required by the Forest Plan (ROD p. 31) to determine how well the Land and Resource Management Plan (Forest Plan) is working. Monitoring and evaluation are divided into three broad categories and are designed to answer the following basic questions:

1. IMPLEMENTATION MONITORING - Did we do what we said we were going to do? This question answers how well the direction in the Forest Plan is being implemented. Collected information is compared to Objectives, Standards, Guidelines and Management Area direction.

2. EFFECTIVENESS MONITORING - Are the standards and guidelines working? This question answers whether the application of standards and guidelines is achieving the results envisioned in the Forest Plan.

3. VALIDATION MONITORING - Is our understanding of the situation and information available correct? This question answers whether the assumptions and predicted effects used to formulate the goals and objectives are accurate.

Depending on the answers to the above questions, the Forest Plan may be amended or revised to adapt to new information and changed conditions. Through this adaptive management approach, the plan is kept current.

While Chapter 4 (Monitoring, Evaluation, and Research Chapter) of the Forest Plan provides programmatic direction for monitoring and evaluating Forest Plan implementation, this Guide provides more specific direction to implement the monitoring strategy outlined in the Forest Plan. See Chapter 4 of the Forest Plan for more details on the linkage between these documents.

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## Monitoring Approach

Monitoring and evaluation are separate activities. Monitoring is the process of collecting data and information. Evaluation is the analysis and interpretation of the information and collected data. A key requirement of a monitoring strategy is that the public be given

timely, accurate information about Forest Plan implementation. This is done through the release of an annual monitoring evaluation report. The monitoring program must be efficient, practical and affordable, and may make use of data that has been or will be collected for other purposes.

Monitoring tasks are scaled to the Forest Plan, program or project to be monitored. Each of these entails different objectives and requirements. Monitoring is not performed on every single activity, nor must it meet the statistical rigor of formal research.

As the Forest Plan points out, budgetary constraints affect the level of monitoring that can be done in a fiscal year. If budget levels limit the Forest's ability to perform all monitoring tasks, then the highest priority tasks are funded first. The Monitoring and Evaluation Guide establishes priority categories for the monitoring items, and the annual monitoring schedule identifies which items will be measured given the current year's funding levels. The monitoring evaluation report provides the analysis and summary of the monitoring results.

It must be emphasized that this document is a guide – it is not a decision document. It is intended to provide guidance for the execution of Forest monitoring and evaluation activities required by NFMA. The Guide itself is dynamic, and may be subject to periodic revision to meet current needs during the life of the Forest Plan. The annual monitoring schedules will be subject to budgetary considerations, emerging research, and issue-driven factors that will influence monitoring priorities from year to year. Priorities will be revisited each year, based on a review of the criteria described in the Priority definition below (under "Purpose of the Monitoring and Evaluation Guide").

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## **Monitoring Needs**

Chapter 4 of the Forest Plan describes monitoring needs in table 4.2. This Monitoring and Evaluation Guide elaborates upon methods to be used to answer the monitoring questions asked in that table.

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## **Monitoring Methods, Tools, and Sources**

The Guide contains specific monitoring items along with methods, protocols, and analytical procedures for monitoring them. In seeking to assess the effectiveness of our efforts to implement the Forest Plan and accomplish high quality on-the-ground results, the Forest will use a wide variety of tools, methods, and information sources. Although this Guide provides details for specific focused monitoring efforts aimed at answering specific questions, many other information sources may be used. Not all monitoring information will require focused site-specific sampling efforts. Information sources and monitoring methods to be used in evaluating our effectiveness may include any or all of the following:

- Accomplishment reports
- Annual project field reviews and NEPA compliance reviews
- General management reviews (GMRs)
- Functional Assistance Trips and Activity Reviews
- Project Administration (Permit/Contract Administrator reports and inspection reports)
- Data or information provided by contractors, permittees, partners, cooperators, researchers, conservation organizations, and other State and Federal agencies.

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## **Purpose of the Monitoring and Evaluation Guide**

The purpose of the Monitoring and Evaluation Guide is to identify specific items that respond to the items described in table 4.2 of the Forest Plan. The Monitoring Guide outlines the methods to be used to collect and analyze the data. In addition, it describes the purpose, methods, locations, responsible persons, and estimated costs. The document also identifies the relative importance of the monitoring items. Each year, an interdisciplinary team will review the monitoring items and the monitoring questions and will work with the Forest leadership team in developing a monitoring schedule for the upcoming year that takes into account available budgets.

Specific components of each item in the Monitoring and Evaluation Guide include:

**Goal:** Forest Plan goal.

**Monitoring Question:** The question in Chapter 4 associated with a Goal from the plan.

**Data Collection Methods:** The specific techniques are described. The sampling technique descriptions may include the unit of measure for each data element, reference values (thresholds or trigger points), spatial scale, and a description of the evaluation process.

**Variable or Parameters:** Specific data needed, usually expressed in the form of measurable or quantifiable units (i.e.: miles of trail, acres of harvest, etc.)

**Frequency of Monitoring:** Describes how often information is gathered or measured. For example, may be annually, every three-five years, or every ten years. Some resources need to be monitored annually to produce trend data.

**Reporting Frequency:** Defines how often the information is analyzed and reported. Depending upon the question being answered, analysis of the information may occur at longer time intervals than the frequency of monitoring.

**Year Last Accomplished:** Describes the Fiscal year the data collection was last collected.

**UTM Location:** Whenever possible obtain UTM coordinates for the area monitored. They can be points, lines, or polygons. This data will then be entered into a GIS layer.

**Data Storage Method and Location:** Includes metadata on where the associated data is stored.

**Who (Cooperators):** Who is involved in the data collection, processing and analysis? These may include Forest Service and non-FS personnel.

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## Using the Monitoring and Evaluation Guide

Aside from serving as a bank of monitoring items that are subsampled to generate the Annual Monitoring Plan, the Guide will also aid in planning monitoring budgets by allowing for out-year scheduling (which is particularly useful for items with data collection intervals of 2, 3 or 5 years)

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## **Annual Monitoring and Evaluation Report**

Developed by resource specialists working with the Forest Supervisor, the Annual Monitoring and Evaluation Report summarizes the results of completed monitoring from the previous year(s), and evaluates the data. The evaluation process determines whether the observed changes are consistent with Forest Plan desired future conditions, goals, objectives and what adjustments may be needed. The Forest Supervisor uses this information either to certify the Forest Plan as sufficient for management in the coming year, or to decide that the Plan needs to be amended.

This report may provide summaries of data collected, but is primarily written to display evaluation of the data, conclusions and recommendations. Comparison of subsequent monitoring and evaluation reports provide a means to track management effectiveness over time and to show the changes that have been made or are still needed.

Key questions to be addressed through monitoring and evaluation are:

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

**Goal: PROGRAM ACCOMPLISHMENTS**

**Monitoring Question:** Have objectives been met by a quantitative comparison of outputs and services with those projected by the *Forest Plan*?

**Data Collection Methods:** Review annual accomplishment report

**Variable or Parameters:**

**Frequency of Monitoring:** Annual

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** H-OST



**Goal: PROGRAM ACCOMPLISHMENTS**

**Monitoring Question:** Determine research opportunities, identify State and Private Forestry (S&PF) support and coordinate needs.

**Data Collection Methods:** Through contact with appropriate individuals through meetings, phone contact, or email.

**Variable or Parameters:**

**Frequency of Monitoring:** Annual

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** H-OST, Staff

**Goal:** CONSERVATION OF THREATENED AND ENDANGERED SPECIES HABITAT

**Monitoring Question:** Monitor effects of management on critical habitat for threatened and endangered species and ensure compliance with recovery plan objectives.

**Data Collection Methods:** As described in recovery plan or design developed by ecosystem specialist and monitoring staff.

**Variable or Parameters:** Occurrence of individuals

**Frequency of Monitoring:** As stated in recovery plan

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** NRIS, Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Ecosystem staff

**Goal: CONSERVATION OF THREATENED AND ENDANGERED SPECIES HABITAT**

**Monitoring Question:** Monitor the extent Forest management is contributing to the conservation of threatened and endangered species and moving toward short term (10-20 years) and long term (100 years) objectives for their habitat conditions and population trends.

**Data Collection Methods:** As described in recovery plan or design developed by ecosystem specialist and monitoring staff.

**Variable or Parameters:** Occurrence of individuals

**Frequency of Monitoring:** As determined by recovery plans

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** NRIS, Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Ecosystem staff

**Goal: CONSERVATION OF THREATENED AND ENDANGERED SPECIES HABITAT**

**Monitoring Question:** In cooperation with the USDI Fish and Wildlife Service, track the status of Indiana bats on the Forest by monitoring:

- Occupied hibernacula to assess changes in population numbers, changes in microclimate, and the effectiveness of protective structures currently in place
- Habitat use at all sites where Indiana bats are documented on the Forest will be quantified at both the local and landscape level using GIS or comparative software.
- Annual incidental take.

**Data Collection Methods:** Methods designed by USDI Fish and Wildlife

**Variable or Parameters:** Occurrence of individuals

**Frequency of Monitoring:** Annual

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Ecosystem staff, USDI Fish and Wildlife

**Goal:** CONSERVATION OF THREATENED AND ENDANGERED SPECIES HABITAT

**Monitoring Question:** Determine the number of suitable roost trees available on the Forest.

**Data Collection Methods:** Use FIA data based on tree variables designated by ecosystem staff.

**Variable or Parameters:** Suitable roost tree

**Frequency of Monitoring:** 5 years

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Ecosystem staff, Northern Research Station FIA

**Goal:** MAINTAIN AND RESTORE SUSTAINABLE ECOSYSTEMS

**Monitoring Question:** Is this Forest complying with guidance outlined in *Forest Plan*?

**Data Collection Methods:** On the ground review of projects.

**Variable or Parameters:**

**Frequency of Monitoring:** Annual

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Forest staff

**Goal:** MAINTAIN AND RESTORE SUSTAINABLE ECOSYSTEMS

**Monitoring Question:** Has the land suitability classification changed since identified in the *Forest Plan*?

**Data Collection Methods:** Review acres identified as suitable.

**Variable or Parameters:**

**Frequency of Monitoring:** 10 years

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Forest staff

**Goal: MAINTAIN AND RESTORE SUSTAINABLE ECOSYSTEMS**

**Monitoring Question:** Are insect and disease population levels compatible with objectives for restoring or maintaining healthy forest conditions?

**Data Collection Methods:** Visual observation, trap counts, or methods developed by S&PF

**Variable or Parameters:** Population levels on individual trees or within an area.

**Frequency of Monitoring:** Annual

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Ecosystem staff, S&PF, and Indiana DNR



**Goal: MAINTAIN AND RESTORE SUSTAINABLE ECOSYSTEMS**

**Monitoring Question:** To what extent is Forest management controlling undesirable occurrences of fire, insect, and disease outbreaks?

**Data Collection Methods:** Visual observation, trap counts, or methods developed by S&PF, fire reports.

**Variable or Parameters:** Population levels on individual trees or within an area. Fire incidence.

**Frequency of Monitoring:** Annual

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Ecosystem staff, fire staff

**Goal: MAINTAIN AND RESTORE SUSTAINABLE ECOSYSTEMS**

**Monitoring Question:** What level of prescribed fire should be used to maintain desired fuel levels or mimic natural processes, maintain and improve vegetative conditions, or restore natural processes and functions to ecosystems?

**Data Collection Methods:** As designed by fire staff and soils staff

**Variable or Parameters:** Post-burn fuel levels and soil texture

**Frequency of Monitoring:** After prescribed burns

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Fire staff, ecosystem staff

**Goal: MAINTAIN AND RESTORE SUSTAINABLE ECOSYSTEMS**

**Monitoring Question:** To what extent is Forest management contributing or responding to air quality effects on ecosystems, human health, or human enjoyment?

**Data Collection Methods:** Visual monitoring of smoke movement during prescribed burns and neighbor complaints about smoke.

**Variable or Parameters:** Smoke levels and phone calls or in person complaints.

**Frequency of Monitoring:** During prescribed burns

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Ecosystem and fire staff

**Goal: MAINTAIN AND RESTORE SUSTAINABLE ECOSYSTEMS**

**Monitoring Question:** Are harvested lands adequately restocked within 5 years?

**Data Collection Methods:** Designated stocking surveys

**Variable or Parameters:** Number of stems

**Frequency of Monitoring:** 3 years after harvest

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** TIMS database, Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Timber staff

**Goal:** MAINTAIN AND RESTORE SUSTAINABLE ECOSYSTEMS

**Monitoring Question:** Are the effects of Forest management resulting in significant changes to productivity of the land?

**Data Collection Methods:** Soil horizon depth

**Variable or Parameters:** Site productivity

**Frequency of Monitoring:** Annual

**Reporting Frequency:** 5-10 years

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Ecosystem staff

**Goal:** MAINTAIN AND RESTORE SUSTAINABLE ECOSYSTEMS

**Monitoring Question:** Have there been changes in cave environments?

**Data Collection Methods:** Bat population counts, monitor environmental changes

**Variable or Parameters:** Animal population changes, environmental variables

**Frequency of Monitoring:** 2-5 years

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Ecosystem staff, USDI fish and Wildlife, IDNR

**Goal: MAINTAIN AND RESTORE SUSTAINABLE ECOSYSTEMS**

**Monitoring Question:** Is the right mix of even-aged and uneven-aged management being used and in the correct forest types to meet objectives?

**Data Collection Methods:** Treatments entered into appropriate databases and then queried for change.

**Variable or Parameters:** Harvest area, regeneration

**Frequency of Monitoring:** Annual

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Timber staff

**Goal:** MAINTAIN AND RESTORE SUSTAINABLE ECOSYSTEMS

**Monitoring Question:** Does location and shape of even-aged harvests blend with the natural terrain?

**Data Collection Methods:**

**Variable or Parameters:** Treatment areas

**Frequency of Monitoring:** Annual

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** H-OST, Forest staff



**Goal: MAINTAIN AND RESTORE SUSTAINABLE ECOSYSTEMS**

**Monitoring Question:** To what extent are management, natural disturbances, and subsequent recovery processes changing the vegetation composition, spatial patterns, and structure? Are conditions moving toward short-term and long-term objectives?

**Data Collection Methods:** Compare current forest stand composition with previous

**Variable or Parameters:** Stand data

**Frequency of Monitoring:** 5 years

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Ecosystem staff, H-OST

**Goal: MAINTAIN AND RESTORE SUSTAINABLE ECOSYSTEMS**

**Monitoring Question:** Are appropriate harvest methods, management intensity, and utilization standards being used?

**Data Collection Methods:** Stocking surveys, monitor utilization on harvest areas

**Variable or Parameters:** Harvest areas

**Frequency of Monitoring:** During and following harvest activity

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Timber staff, H-OST

**Goal:** MAINTAIN AND RESTORE SUSTAINABLE ECOSYSTEMS

**Monitoring Question:** What are the population trends of management indicator species?

**Data Collection Methods:** Habitat change from GIS, population trends from BBS and American woodcock survey.

**Variable or Parameters:** Stand age, occurrence

**Frequency of Monitoring:** 2-5 years

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Ecosystem staff, contractors, universities

**Goal:** MAINTAIN AND RESTORE SUSTAINABLE ECOSYSTEMS

**Monitoring Question:** Are even-aged management practices benefiting wildlife species?

**Data Collection Methods:** Ruffed grouse populations based on habitat changes and drumming surveys

**Variable or Parameters:** Occurrence of drumming

**Frequency of Monitoring:** 5 years

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Ecosystem staff, IDNR

**Goal:** MAINTAIN AND RESTORE SUSTAINABLE ECOSYSTEMS

**Monitoring Question:** What is the status of oak and hickory on established regeneration plots dating to 1985 Purdue study?

**Data Collection Methods:** Established sampling design from study plan

**Variable or Parameters:** Stems

**Frequency of Monitoring:** 10-15 years

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Ecosystem staff, Purdue Department of Forestry and Natural Resources

**Goal: MAINTAIN AND RESTORE SUSTAINABLE ECOSYSTEMS**

**Monitoring Question:** To what extent is Forest management contributing or responding to populations of terrestrial or aquatic non-native invasive species that threaten native ecosystems?

**Data Collection Methods:** Sample plots

**Variable or Parameters:** Number of stems

**Frequency of Monitoring:** Annual

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Ecosystem staff, University cooperators

**Goal: MAINTAIN AND RESTORE SUSTAINABLE ECOSYSTEMS**

**Monitoring Question:** How will diversity be affected by various mixes of resource outputs and uses? Ensure that the diversity of plant and animal communities is at least as great as that which would be expected in a natural forest and that reductions in diversity are prescribed only where needed to meet overall multiple use objectives.

**Data Collection Methods:** Inventory on established plots or transects

**Variable or Parameters:** Plant and animal occurrence

**Frequency of Monitoring:** 5 years

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Ecosystem staff

**Goal:** MAINTAIN AND RESTORE WATERSHED HEALTH

**Monitoring Question:** To what extent is Forest management affecting water quality, quantity, flow timing, and the physical features of aquatic, riparian, or wetland ecosystems?

**Data Collection Methods:** Water samples from streams or other water features

**Variable or Parameters:** Water quality

**Frequency of Monitoring:** Following project activity

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** NRIS, Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Ecosystem staff



**Goal:** MAINTAIN AND RESTORE WATERSHED HEALTH

**Monitoring Question:** Have the soil and water mitigation and protection measures been effective as applied to all management activities?

**Data Collection Methods:** Monitor soil movement and mitigation measures

**Variable or Parameters:** Soil movement

**Frequency of Monitoring:** During and following project activity

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Ecosystem staff

**Goal: PROTECT OUR HERITAGE RESOURCES**

**Monitoring Question:** Are mitigation and protection measures correctly applied for ground disturbing activities?

**Data Collection Methods:** Monitor ground disturbing activities as they progress.

**Variable or Parameters:** Heritage sites

**Frequency of Monitoring:** Annual

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Heritage database, Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Heritage staff

**Goal:** PROTECT OUR HERITAGE RESOURCES

**Monitoring Question:** Are heritage resources being damaged by vandalism?

**Data Collection Methods:** Visual inspection of heritage sites

**Variable or Parameters:** Heritage sites

**Frequency of Monitoring:** Annual

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Heritage database, Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Heritage staff

**Goal:** PROVIDE FOR A VISUALLY PLEASING LANDSCAPE

**Monitoring Question:** Is the Forest evaluating the visual resource?

**Data Collection Methods:** Monitor implementation of projects

**Variable or Parameters:** Forest-wide landscapes

**Frequency of Monitoring:** Annual

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Recreation staff

**Goal: PROVIDE FOR RECREATION IN HARMONY WITH NATURAL COMMUNITIES**

**Monitoring Question:** Are we limiting and distributing visitor use in wilderness in accord with periodic estimates of the maximum levels of use that allow natural processes to operate freely and so as not to impair the values?

**Data Collection Methods:** Use surveys and visual inspections of impacts on vegetation

**Variable or Parameters:** Use levels and vegetation impacts

**Frequency of Monitoring:** 5 years

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Recreation staff

**Goal:** PROVIDE FOR RECREATION IN HARMONY WITH NATURAL COMMUNITIES

**Monitoring Question:** Consideration of establishment of physical facilities, use regulations, and recreation opportunities responsive to current and anticipated user demands.

**Data Collection Methods:** Public comments

**Variable or Parameters:** Facilities at developed recreation areas

**Frequency of Monitoring:** Annual

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Recreation staff

**Goal:** PROVIDE FOR RECREATION IN HARMONY WITH NATURAL COMMUNITIES

**Monitoring Question:** Is trail use planned and implemented to protect land and other resources, promote public safety, and minimize conflicts, with other users of the NFS lands?

**Data Collection Methods:** Trail monitoring

**Variable or Parameters:** Soil movement, wet areas, vegetation impacts, and use surveys

**Frequency of Monitoring:** Annual

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Recreation staff

**Goal:** PROVIDE A USEABLE LANDBASE

**Monitoring Question:** Does the Forest's land adjustment program support and enhance the Plan's desired conditions and goals and contribute to efficient and effective stewardship?

**Data Collection Methods:** Summary of annual accomplishments

**Variable or Parameters:** Acres purchased or exchanged

**Frequency of Monitoring:** Annual

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Annual report to monitoring coordinator

**Who (Cooperators):** Lands staff



**Goal:** PROVIDE A USEABLE LANDBASE

**Monitoring Question:** Are temporary roads closed and revegetated within 10 years of contract or permit termination?

**Data Collection Methods:** Inspection of temporary road

**Variable or Parameters:** Temporary road

**Frequency of Monitoring:** At end of contract or permit, then 5 and 10 years after

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Engineering staff

**Goal:** PROVIDE A USEABLE LANDBASE

**Monitoring Question:** To what extent is the Forest, in coordination with other public agencies, providing safe, cost effective, minimum necessary road systems for administrative and public use?

**Data Collection Methods:** Meeting with public agencies and following guidelines in FSH and FSM

**Variable or Parameters:** Roads, miles and standards

**Frequency of Monitoring:** As occur

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Engineering staff and H-OST

**Goal:** PROVIDE FOR HUMAN AND COMMUNITY DEVELOPMENT

**Monitoring Question:** Are there emerging issues, concerns, and opportunities?

**Data Collection Methods:** Public comment

**Variable or Parameters:**

**Frequency of Monitoring:** Annual

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** H-OST, Forest staff

**Goal:** PROVIDE FOR HUMAN AND COMMUNITY DEVELOPMENT

**Monitoring Question:** Have output levels and mixes of goods and services demanded by society changed significantly when compared with those levels projected by the Forest Plan?

**Data Collection Methods:** Public comment

**Variable or Parameters:**

**Frequency of Monitoring:** 5 years

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** H-OST, Forest staff

**Goal:** PROVIDE FOR HUMAN AND COMMUNITY DEVELOPMENT

**Monitoring Question:** How do actual costs of carrying out planned management compare to cost estimates?

**Data Collection Methods:** Budget analysis

**Variable or Parameters:** Unit cost

**Frequency of Monitoring:** Annual

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Budget

**Goal:** PROVIDE FOR HUMAN AND COMMUNITY DEVELOPMENT

**Monitoring Question:** Are timber sales meeting Forest Plan ASQ?

**Data Collection Methods:** Timber sale report

**Variable or Parameters:** Ccf sold

**Frequency of Monitoring:** Annual

**Reporting Frequency:**

**Year Last Accomplished:**

**UTM Location:**

**Data Storage Method and Location:** TIMS, Document monitoring events and forward copy to monitoring coordinator.

**Who (Cooperators):** Timber staff