

08-03-2026

CHAPTER 4

MONITORING AND EVALUATION



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CHAPTER 4 MONITORING AND EVALUATION

INTRODUCTION

The 2012 Planning Rule includes a requirement that all Forests that are not in plan revision update their forest plan monitoring within four years, or as soon as is practicable (36 CFR 219.12c). This document updates our forest plan monitoring to meet this requirement of the 2012 rule.

THE ROLE OF MONITORING UNDER THE 2012 PLANNING RULE

The National Forest Management Act (NFMA) requires “continuous monitoring and assessment in the field” to evaluate “the effects of each management system to the end that it will not produce substantial and permanent impairment of the productivity of the land” (16 USC 1604(g)(3)(C)). The 2012 Planning Rule includes a three-part iterative cycle of assessment, planning, and monitoring in a continuous feedback loop.

Monitoring is meant to support the assessment process and evaluate plan implementation over time. This planning framework is designed to “inform integrated resource management and allows the Forest Service to adapt to changing conditions, including climate change, and improve management base on new information and monitoring” (§ 219.5 (a)).

SPECIFIC REQUIREMENTS FOR MONITORING UNDER THE 2012 PLANNING RULE

A monitoring plan will consist of “monitoring questions and associated indicators” which “must be designed to inform the management of resources on the plan area, including by testing relevant assumptions, tracking relevant changes, and measuring management effectiveness and progress toward achieving or maintaining the plan’s desired conditions or objectives” (219.12 (a)(2)). The monitoring program must also be “coordinated with the Regional Forester and Forest Service State and Private Forestry and Research and Development” (§ 219.12 (a)(1)) and support and align with a broader-scale monitoring program, to be developed at the regional level, that will address monitoring questions at a geographic scale broader than one plan area (§ 219.12 (b)). Furthermore, in developing the monitoring plan, the responsible official should also provide opportunities for public participation, “taking into account the skills and interests of affected parties”, as well as the scope, methods, forum and timing of those opportunities (§ 219.4 (a)).

Monitoring may involve evaluating: a) if standards and guidelines are implemented (implementation monitoring); b) if management actions and standards and guidelines are effective in achieving goals and objectives (effectiveness monitoring); and c) the long-term trend and condition of key resources (condition or surveillance monitoring). At a minimum, the plan monitoring program must contain one or more monitoring questions and associated indicators addressing the following eight items (see 219.12[a][5][i-viii]):

- (i) The status of select watershed conditions;
- (ii) The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems;
- (iii) The status of focal species to assess the ecological conditions required under § 219.9;
- (iv) The status of a select set of the ecological conditions required under § 219.9 to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern;
- (v) The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives;
- (vi) Measurable changes in the plan area related to climate change and other stressors that may be affecting the plan area;
- (vii) Progress toward meeting the desired conditions and objectives in the plan, including providing multiple use opportunities;
- (viii) The effects of each management system to determine that they do not substantially and permanently impair the productivity of the land (16 U.S.C. 1604(g)(3)(C)).

A monitoring evaluation report is to be produced and made available to the public every two years (§ 219.12 (d)). It “must indicate whether or not a change to the plan, management activities, or the monitoring program, or a new assessment, may be warranted based on the new information... [and] must be used to inform adaptive management of the plan area” (§ 219.12 (d)(2)). The monitoring program and evaluation report are part of the administrative record (§ 219.14 (b)) and the Forest Supervisor must document “how the best available scientific information was used to inform planning, the plan components, and other plan content, including the plan monitoring program” (§219.13 (a)(4)). Forests will also have to document how Best Available Scientific Information (BASI) is used to develop the monitoring plan and specific monitoring items.

MONITORING PLAN COMPONENTS

The following section details the specific components of the proposed Monitoring Plan. Specific monitoring items are organized by the required categories of monitoring questions identified in the planning rule (§ 219.12), with at least one monitoring question and indicator for each category. Each question presented in the final Monitoring Plan will include a brief description of the desired condition or objective each monitoring item is associated with, followed by the question, a description of the specific indicator or metric used to answer or evaluate the monitoring question, the data source or measurement protocol associated with the monitoring item, and finally, a rationale or justification for the specific monitoring indicator and protocol. This will ensure that the requirements for best available science are met.

Monitoring Question	Indicator	Data Source or Protocol	Frequency	Database/Information Management Strategy
To what extent has the condition on watersheds containing National Forest System lands been restored, maintained or improved?	Sixth level watersheds containing NNFG lands in a Watershed Condition Class I, II, or III	- USFS Watershed Condition Framework (WCF) protocols - Watershed Assessment of River Stability and Sediment Supply (WARSSS)	5 Years	USFS WCATT Database
Are Streams and Waterbodies meeting State assigned Beneficial Uses and associated water quality criteria?	NNFG streams and waterbodies meeting or exceeding state water quality criteria for assigned beneficial uses.	- State Assigned Beneficial Uses and associated Water Quality Standards - State 303d and 305b reports/lists - NNFG Stream Survey Protocols - Rapid Bio-assessment Protocols for Use in Streams and Wadeable Rivers	Bi-Annually* *coinciding with State Water Quality Assessment Reports	NRIS Water (AqS) Database NNFG electronic Watershed files
Are Streams and Waterbodies protected from non-point source pollution sources?	Implementation and Effectiveness of Forest Plan Standards and Guidelines, Regional Watershed Conservation Practices (WCPs), and Best Management Practices (BMPs)	USFS BMP Monitoring Protocols	Annually	USFS National BMP Database

Monitoring Category 2: Status of Select Ecological Conditions				
Monitoring Question	Indicator	Data Source or Protocol	Frequency	Database/Information Management Strategy
Is habitat effectiveness on designated big game range being maintained or enhanced?	• Recreational and economic issue and cooperative program with state wildlife agencies		5 Years	

Monitoring Category 3: Focal Species				
Monitoring Question	Indicator	Data Source or Protocol	Frequency	Database/Information Management Strategy
What is the status of black-tailed prairie dog to assess the functional role of colony habitat?	• Historical vs. current acreage levels • Prairie dog town occupancy, extent and density • Sylvatic plague extent/changes	• USFS prairie dog monitoring program • Sylvatic plague surveys • State data • Academic research		NRIS Wildlife
What is the status of pygmy nuthatch to assess the functional role of forested habitat?	• Acres and distribution of potential woodland nuthatch habitat • Current condition and trend of key woodland nuthatch habitat • Snag retention	• USFS forest monitoring		NRIS Wildlife FSVeg Spatial
What is the status of prairie grouse (plains sharp-tailed and greater prairie chicken) to assess the functional role of grassland vegetation habitat?	• Acres and distribution of potential prairie grouse habitat • Current condition and trend of grassland vegetation structure • Current condition and trend of forb/shrub patches	• USFS vegetation structure monitoring		FSVeg Spatial NRIS Wildlife

Monitoring Category 3: Focal Species				
Monitoring Question	Indicator	Data Source or Protocol	Frequency	Database/Information Management Strategy
To what extent has cooperative agreements and the landownership adjustment program been effective in reducing private land conflicts involving prairie dogs and enhancing long-term opportunities for development of prairie dog colony complexes in the priority National Grassland areas?	- Number of conflict situations resolved; - Additional acres of potential or current prairie dog habitat under federal ownership or cooperative agreements		5 Years	NRIS Wildlife FACTS

Monitoring Category 4: Select Ecological Conditions for TES, SPCC's				
Monitoring Question	Indicator	Data Source or Protocol	Frequency	Database/Information Management Strategy
What is the status and trend of habitat to support the recovery of the black-footed ferret on the planning unit?	• Prairie dog town extent, density and occupancy • Historical vs. current acreage levels • Sylvatic plague extent / changes	• USFS black-footed ferret monitoring • USFS prairie dog monitoring program • Sylvatic plague surveys • Academic research		NRIS Wildlife
What is the status and trend of habitat to support the recovery of the blowout penstemon on the planning unit?	• Sandhill blowout extent and size • Historical vs. current acreage levels of Sandhill blowouts	• USFS Sandhill blowout monitoring • USFS blowout penstemon monitoring		NRCS Soils FSVeg Spatial TESP
What is the status and trend of habitat to support the recovery of the American burying beetle on the planning unit?	• Acres and distribution of potential habitat • Current condition and trend of grassland vegetation structure	• USFS vegetation structure monitoring		FSVeg Spatial

Monitoring Category 5: Visitor Use and Recreation				
Monitoring Question	Indicator	Data Source or Protocol	Frequency	Database/Information Management Strategy
To what extent are trails managed to meet regional standards and to minimize conflicts among users?	Location and miles of trails meeting and not meeting regional standards. Reports of conflicts among users.		Annually	Transportation Dataset INFRA
Where does the demand for recreation opportunities warrant development of additional opportunities such as trails or campgrounds?	Customer survey and individual public contacts. Name of facility, location, and time existing use exceeds capacity.		5 Years	
To what extent are Grassland and Forest visitors informed of the recreation opportunities available to them; are they adequately guided to those recreation opportunities; and do they receive adequate interpretive information on National Register of Historic Places and other heritage sites, geologic, paleontologic, wildlife, plant, and recreation resources or opportunities?	Customer survey and individual contacts with grassland and forest visitors and adjacent landowners.		5 Years	

Monitoring Category 5: Visitor Use and Recreation				
Monitoring Question	Indicator	Data Source or Protocol	Frequency	Database/Information Management Strategy
How well is the current road and trail network providing for public needs?	Travel Management	MVUM	5 Years	Transportation Dataset INFRA
To what extent are traditional cultural properties being protected?	Condition of each site, incidents of vandalism or disruption of the use of traditional cultural properties.		5 Years	
To what extent have the special features found Special Interest Areas been conserved or enhanced?	Condition of features / communities		5 Years	
To what extent are the Soldier Creek Wilderness special features and communities of special concern conserved or enhanced?	Condition of features / communities		5 Years	Wilderness Stewardship Plan
What are the effects of National Forest System Management on adjacent communities?	NFS related jobs and income; Community tourism receipts; Federal receipts, Federal revenue sharing with state and local governments.		Annually	

Monitoring Category 6: Climate Change and Other Stressors				
Monitoring Question	Indicator	Data Source or Protocol	Frequency	Database/Information Management Strategy
How have extreme and average temperature and precipitation values changed across the Nebraska National Forests and Grasslands?	• Timing, type and amount of precipitation • Changes in air temperature		5 Years	High Plains Climate Consortium

Monitoring Category 7: Progress Towards Desired Conditions				
Monitoring Question	Indicator	Data Source or Protocol	Frequency	Database/Information Management Strategy
To what extent are rangeland vegetation structure objectives being met?	Location & percent of rangeland area meeting, making measurable progress towards, or not meeting desired vegetation structure.		5 Years	FSVeg Spatial SI GIS Dataset Rangeland Inventory and Monitoring
To what extent are rangeland vegetation composition objectives being met?	Location & percent of rangelands meeting, making measurable progress towards, or not meeting desired vegetation composition.		5 Years	FSVeg Spatial SI GIS Dataset Rangeland Inventory and Monitoring
To what extent are desired vegetation conditions in forested areas being met?	Location & percent of forested lands meeting, making measurable progress towards, or not meeting desired structural stages.		5 Years	FSVeg Spatial SI GIS Dataset Rangeland Inventory and Monitoring
To what extent are the Red Shirt and Indian Creek Recommended for Wilderness special features and communities of special concern conserved or enhanced?	Condition of features / communities		5 Years	

Monitoring Category 7: Progress Towards Desired Conditions				
Monitoring Question	Indicator	Data Source or Protocol	Frequency	Database/Information Management Strategy
To what extent are National Register sites and districts being protected and preserved?	Condition of each site, incidents of vandalism or disruption of the use of traditional cultural properties.		5 Years	
To what extent are streams and riparian areas maintained at or trending towards Robust Stream Health, as defined by Region 2 FSH 2509.25?	Miles of stream in each stream health class (Robust, At-Risk, Diminished) and trends over time.	- Rosgen Stream Classification and Assessment Protocols - Stream Reference Reach Monitoring (Harrelson et al. (1994); Rosgen methods) - EPA National River and Stream Assessment Protocols - NNFG Stream Monitoring Protocols - Proper Functioning Condition (PFC) Protocols - Multiple Indicator Monitoring (MIM) Protocols	5 Years	NRIS Water (AqS) WCATT database NNFG Watershed electronic files

Monitoring Category 7: Progress Towards Desired Conditions				
Monitoring Question	Indicator	Data Source or Protocol	Frequency	Database/Information Management Strategy
To what extent are wetland ecosystems protected to maintain stable conditions supporting hydrologic function, hydric soils, and hydric vegetative communities?	• Number of springs and acres of wetland ecosystems in each stability class* and trends over time: ▪ Good – Properly Functioning Condition (PFC) ▪ Fair – Functioning At-Risk (FAR) ▪ Poor – Not Properly Functioning (NPF) * EPA National Wetland Assessment uses classes of Good, Fair, and Poor; while Proper Functioning Condition Assessment Protocols refer to PFC, FAR, and NPC classes.	• USFS Groundwater Dependent Ecosystems (GDE), Level I and Level II Protocols • EPA National Wetland Condition Assessment Report and Protocols • EPA National Lake Assessment Report and Protocols • EPA and/or US Army Corps of Engineers Wetland Classification, Delineation, and Assessment Protocols • Proper Functioning Condition (PFC) Protocols	5 Years	NRIS Water (AqS) NNFG spring and wetland GIS databases NNFG Watershed Electronic files
To what extent have degraded streams, riparian areas, wetlands, and other waterbodies on National Forest System lands been restored?	• Miles of degraded streams and riparian areas restored. • Acres of degraded wetlands restored.	• USFS Watershed Improvement Tracking (WIT) Database protocols and Accomplishment Guidance for identifying Affected Zones	Annually	NRIS WIT database NNFG Watershed Electronic Files

Monitoring Category 8: Management and the Productivity of the Land				
Monitoring Question	Indicator	Data Source or Protocol	Frequency	Database/Information Management Strategy
To what extent has soil health and productivity been degraded by Forest Service management or permitted activities; and to what extent have degraded soils been restored?	Acres of soils degraded (soil disturbance class 2 or 3) and acres of soils restored to soil disturbance class 0 or 1 by Forest Service management or permitted activities.	- USFS Forest Soil Disturbance Monitoring Protocol, Volumes I and II: General Technical Report GTR-WO-82a and 82b - USFS Watershed Improvement Tracking (WIT) Database protocols and Accomplishment Guidance for identifying Affected Zones - USFS National BMP Monitoring Protocols	Annually* *targets reported annually for Soil and Water Improvement or Fisheries Stream Miles Improved	NRIS WIT database USFS National BMP Database NNFG Watershed Electronic Files
To what extent are noxious weeds, invasive species, and animal damage expanding or being reduced?	Species, Location, and acres of noxious weeds, Invasive species, and animal damage.		5 Years	TESP-IS Noxious Weeds