

## **CHAPTER 6: MONITORING AND EVALUATION PLAN**

Overview.....	1
Evaluation and Monitoring Strategy.....	2
Forest Land and Resource Plan Evaluation and Reports.....	3
Monitoring Elements.....	4
Monitoring Strategy.....	5



## **CHAPTER 6: MONITORING AND EVALUATION PLAN**

### **Overview**

Evaluation and monitoring provide knowledge and information to keep the Land and Resource Management Plan viable. Appropriate selection of indicators, and monitoring and evaluation of key results helps determine if Forest Plan management direction is being met. Evaluation and monitoring also helps determine if there should be changes made to the goals and objectives, or monitoring methods.

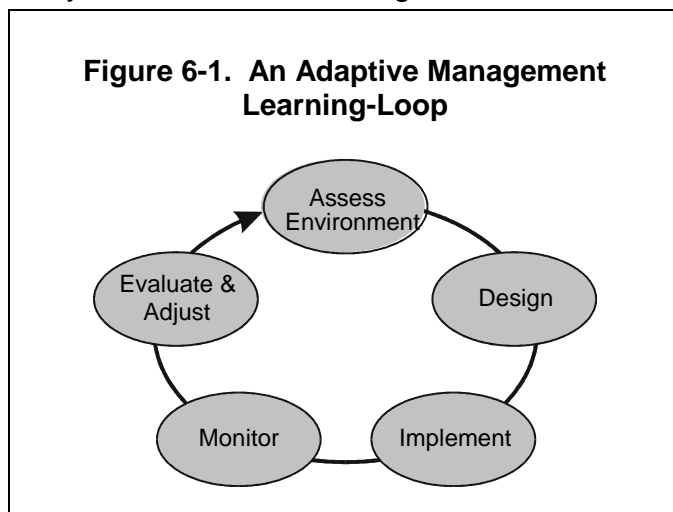
The Uinta National Forest will utilize the concept of adaptive management consistent within the Intermountain Region's Continuous Assessment and Planning (CAP) approach, which is the Region's foundation for planning and management. Forest planning regulation requires that forest plans be revised periodically every 10-15 years after plan approval (36 CFR 219.10(g)). One of the lessons learned from 15+ years of experience with Forest Plan implementation is that plans need to be dynamic to account for changed resource conditions, new information and science, and changed regulation and policies.

Forest Plans may need to be amended frequently, and revision may be required before requirements dictate. Within an adaptive management framework, the need to amend or revise the Forest Plan may result from:

- Recommendations of an interdisciplinary team, based on evaluation and monitoring results.
- Direction stemming from an administrative appeal or legal challenge.
- Planning errors found during forest plan implementation.
- Changes in physical, biological, social, or economic conditions.

Evaluation and monitoring are critical to adaptive management. Other component parts of adaptive management include inventory collection, data management, assessment, planning, and implementation. No single component can be isolated from the whole of adaptive management.

Consider the learning-loop schematic illustrated in Figure 6-1; No matter where we jump into the loop, all phases are needed. This learning-loop can focus on a problem, a forest plan, on process, or any other aspect of an organization. In most of our Forest Plan evaluation and monitoring we



will focus our learning on how effective we are at implementing the plan, how effective our management proves to be in realizing desired future conditions, as well as identifying where improvements may be made to the Plan through amendments or at the time of the next revision.

Adaptive management must be approached in the context of organizational learning. This requires that we keep in mind the workings of complex systems and complex interactions of actors, while trying to manage to take advantage of complexity, novelty, and surprise. The learning focus is on organizational and individual betterment of process, theory, and behavior.

Many of the indicators we identify operate in the context of systems at work on the landscape and/or in social settings. One challenge in evaluation and monitoring is to adequately address such a “systems focus” and to develop stories about the state and progression of systems, highlighting important functions, structure, and composition. As these systems stories are developed, told and retold we are challenged as well to disclose new information or changed conditions compared to reference values or decision criteria used in the Forest Plan Record of Decision.

### **Evaluation and Monitoring Strategy**

Our evaluation and monitoring strategy is straightforward. It will focus on monitoring requirements from National Forest Management Act Regulation, as well as other pertinent law and regulation. Additionally, social and ecological systems in and around the forest will be monitored to make sure that we stay aware of changes in our environment.

The monitoring and evaluation process starts with evaluation. Identifying the questions to be answered and which evaluations are needed to answer them helps to identify information needs, data collection strategies. Focusing information and data needs ensures the correct information is collected to make a determination of whether the Forest Plan direction is “working” as intended. The intent is to gather only as much information as is necessary to make an informed decision regarding Forest Plan implementation and effectiveness without being paralyzed by an overabundance of data that does not add to the overall evaluation of the Forest Plan.

Monitoring supports evaluation by sorting out which indicators need to be watched and then watching them to provide punctuation and validity to evaluation stories. Monitoring questions guide the effort. Some monitoring information is “baseline,” to serve as a basis on which to monitor other information on systems or particular management decisions. Much of this information is ongoing inventory and monitoring programs approved by the Forest Supervisor. However, a significant amount of information comes from other entities and sources. The Forest Supervisor will develop a Forest Monitoring Guide to document the overall Monitoring and Evaluation Program and specifics on method and design.

The Forest Plan monitoring efforts will be broad-based, since the Land and Resource Management Plan is designed around broad vision for the forest. More specific monitoring elements and guidance will be highlighted in the Forest Monitoring Guide. The intent in developing a Forest Monitoring Guide is to provide a vehicle for monitoring that is nimble and flexible, so that we can change monitoring indicators along with other information and knowledge as we learn more.

### **Forest Land and Resource Plan Evaluation and Reports**

Evaluation is more than reporting facts and figures. Forest plan evaluation tells the story or stories of how forest plan decisions have been implemented, how effective the implementation has proved to be in accomplishing outcomes envisioned in the plan, what was learned along the way, and in the long run how valid our assumptions and theories proved to be that led us to develop Forest Plan direction.

The Forest Supervisor will maintain monitoring information for public reviews, including internet-based reports, and will evaluate such on a periodic basis to determine, among other things, need for amendment or revision of the Forest Plan. Formal evaluation and reporting will occur every five years, unless the Forest Supervisor deems it necessary that a shorter timeframe is warranted for some evaluations. The five-year review will provide a comprehensive evaluation of information in response to monitoring questions and regulatory review requirements as depicted in Table 1.

**Table 6-1. Forest Plan Evaluation Expectations**

<b>Focus of Evaluation</b>	<b>Annual Posting of Results?</b>	<b>Five-Year Evaluation Report?</b>
A program of monitoring and evaluation shall be conducted that includes consideration of the effects of National Forest Management on land, resources, and communities adjacent to or near the National Forest being planned and the effects upon National Forest management from activities on nearby lands managed by other Federal or other government agencies or under the jurisdiction of local governments. (36 CFR 219.7(f))		X
... The Forest Supervisor shall review the conditions on the land covered by the plan at least every 5 years to determine whether conditions or demands of the public have changed significantly. (36 CFR 219.10(g))		X
At intervals established in the plan, implementation shall be evaluated on a sample basis to determine how well objectives have been met and how closely management standards and guidelines have been applied. Based upon this evaluation, the interdisciplinary team shall recommend to the Forest Supervisor such changes in management direction, revision, or amendments to the forest plan as are deemed necessary. (36 CFR 219.12(k))		X

Focus of Evaluation	Annual Posting of Results?	Five-Year Evaluation Report?
Monitoring requirements identified in the forest plan shall provide for— (36 CFR 219.12(k))		
[1] A quantitative estimate of performance comparing outputs and services with those projected by the forest plan;	X	
[2] Documentation of the measured prescriptions and effects, including significant changes in productivity of the land; and		X
[3] Documentation of costs associated with carrying out the planned management prescriptions as compared with costs estimated in the forest plan.	X	
[5] A determination of compliance with the following standards:		X
[i] Lands are adequately restocked as specified in the forest plan;		
[ii] Lands identified as not suited for timber production are examined at least every 10 years to determine if they have become suited; and that, if determined suited, such lands are returned to timber production; (Note: See also 219.14(d): ...Designation in the plan of lands not suited for timber production shall be reviewed at least every 10 years. --)		X
[iii] Maximum size limits for harvest areas are evaluated to determine whether such size limits should be continued; and		X
[iv] Destructive insects and disease organisms do not increase to potentially damaging levels following management activities.		X
(a)(6) Population trends of the management indicator species will be monitored and relationships to habitat changes determined. This monitoring will be done in cooperation with state fish and wildlife agencies, to the extent practicable. (36 CFR 219.19 Fish and wildlife resource)	X	X
Terms and conditions or reasonable and prudent measures which result from consultation under Section (a) of the Endangered Species Act	X	X
Effectiveness of mitigation measures and monitoring of risk factors described in the Record of Decision for the Forest Land and Resource Management Plan		X

## Monitoring Elements

Table 2 contains monitoring elements organized around significant monitoring questions. More in-depth details are developed in the Forest Plan Monitoring Guide. The Forest Monitoring Guide will address requirements from 36 CFR 219.12(k)[4], and will include a description of:

- (i) The actions, effects, or resources to be measured, and the frequency of measurements;
- (ii) Expected precision and reliability of the monitoring process; and
- (iii) The time when evaluation will be reported.

Since precision and reliability are tied to specific procedures and methods that change as we learn, we choose to address them in the Forest Monitoring Guide.

Monitoring Strategy

The monitoring strategy contains all relevant Land and Resource Management Plan monitoring called for by the monitoring drivers. The available monitoring budget will in all likelihood require a significantly smaller monitoring program in any given year than the table below presents. It is the monitoring items not the monitoring questions that are the major cost factor. The monitoring item initiates the data collection and a single monitoring item may answer several monitoring questions. Cooperators can greatly expand the annual monitoring program and stretch a Forest's available monitoring budget many fold.

In almost all cases, it will be necessary for the Forest Leadership Team, in conjunction with resource specialists input, to prioritize what will be monitored in any given year based on the budgets, current issues, monitoring priorities, and results/accomplishments for the previous years' monitoring.

Table 6-2. Terrestrial and Aquatic Wildlife Biological Diversity Monitoring

Monitoring Topic		Terrestrial and Aquatic Wildlife Biological Diversity				
Type	Monitoring Question	Indicator	Measurement Frequency	Reporting Frequency	Precision and Reliability	Monitoring Priority
Effectiveness	(1) Are Forest management activities affecting <b>Management Indicator Species (MIS)</b> and what are the population trends and habitat relationships?	<b>Northern-goshawk:</b> a. Goshawk territory activity b. Habitat conditions  <u>Status:</u> Projects in potential habitat are surveyed; known territories have been monitored for activity.	a. At least 1/3 of known territories surveyed annually. b. Habitat cover type, age class, and patch size composition every 5 years.	Results summarized every 5 years	a. Moderate b. Low	a. High b. Moderate
		<b>American beaver:</b> Number of active beaver dams.  <u>Status:</u> Selected streams and watersheds have been inventoried. Forest-wide monitoring protocol will be developed.	At least 20% of sample streams/watersheds measured annually.	Every 5 years	Moderate	Moderate

Monitoring Topic		Terrestrial and Aquatic Wildlife Biological Diversity				
Type	Monitoring Question	Indicator	Measurement Frequency	Reporting Frequency	Precision and Reliability	Monitoring Priority
		<b>Three-toed woodpecker:</b> a. Index of population abundance b. Habitat conditions  <del>Status: Projects in potential habitat are surveyed; three Breeding Bird Surveys (BBS) are conducted annually on the Forest. Additional Forest-wide monitoring protocol will be developed.</del>	a. Annually for BBS surveys. b. Habitat cover type, age class, and patch size composition every 5 years.	a. Annually b. Every 5 years	a. Moderate b. Moderate	a. High b. Moderate
		<b>Colorado River cutthroat trout:</b> a. Population estimates b. Habitat conditions  <del>Status: Selected streams have been inventoried and/or monitored in conjunction with UDWR. Forest-wide monitoring protocol will be developed.</del>	a. At least 33% of sample streams surveyed annually. b. Every 5 years	Every 5 years	Moderate	a. High b. Moderate
		<b>Bonneville cutthroat trout:</b> a. Population estimates b. Habitat conditions  <del>Status: Selected streams have been inventoried and/or monitored in conjunction with UDWR. Forest-wide monitoring protocol will be developed.</del>	a. At least 33% of sample streams surveyed annually. b. Every 5 years	Every 5 years	Moderate	a. High b. Moderate



Monitoring Topic		Terrestrial and Aquatic Wildlife Biological Diversity				
Type	Monitoring Question	Indicator	Measurement Frequency	Reporting Frequency	Precision and Reliability	Monitoring Priority
	(2) Is the Forest protecting Federally listed <b>Threatened and Endangered (T&amp;E) species</b> and their habitat while implementing the Forest Plan?	<p><b>Bald eagle</b>—Index of winter roosting activity on the Forest.</p> <p><u>Status:</u> Selected areas where species congregates in winter have been surveyed in conjunction with the UDWR. These surveys will continue.</p>	Annually	Annually	Moderate	Moderate
		<p><b>Canada lynx</b>—Documentation of observations</p> <p><u>Status:</u> Forest contains 2 Lynx Analysis Units. Historical sightings there have been documented. Three-year National Lynx Survey completed in 2001. Comment: No longer a listed species in Utah.</p>	Ongoing—Whenever reported sighting occurs	Every 5 years	Moderate	High
		<p><b>Clay phacelia (<i>Phacelia argillacea</i>)</b>—Documentation of observations and project surveys in potential habitat</p> <p><u>Status:</u> Occurs in Spanish Fork Canyon. Not known to occur on the Forest. Broad habitat-wide surveys have been conducted. Projects in potential habitat are surveyed.</p>	Ongoing—Whenever observations or surveys in potential habitat occur	Every 5 years	High	High

Monitoring Topic		Terrestrial and Aquatic Wildlife Biological Diversity				
Type	Monitoring Question	Indicator	Measurement Frequency	Reporting Frequency	Precision and Reliability	Monitoring Priority
		<b><del>Ute ladies'-tresses (<i>Spiranthes diluvialis</i>)—</del></b> Documentation of observations and project surveys in potential habitat  <b><del>Status:</del></b> Known to occur along the Spanish Fork River and Diamond Fork Creek. Projects in potential habitat are surveyed.	<del>Ongoing—Whenever observations or surveys in potential habitat occur</del>	<del>Every 5 years</del>	<del>High</del>	<del>High</del>
		<b><del>Ute ladies'-tresses (<i>Spiranthes diluvialis</i>)—</del></b> Population trends.  <b><del>Status:</del></b> Known populations along Diamond Fork Creek are annually surveyed by Central Utah Water Conservancy District.	<del>At least every three years (historically surveys have been conducted annually)</del>	<del>Every 5 years</del>	<del>High</del>	<del>High</del>

**Table 6-3. Rangeland Health and Management Monitoring**

Monitoring Topic		Rangeland Health and Management				
Type	Monitoring Question	Indicator	Measurement Frequency	Reporting Frequency	Precision and Reliability	Monitoring Priority
Implementation	(4) Is <del>permitted grazing</del> in compliance with the Forest Plan? Are Forest Plan <del>utilization standards</del> effective in mitigating impacts of grazing?	<b>Compliance with utilization standards</b>  <u>Status:</u> Utilization compliance has been ongoing, but results have not traditionally been summarized.	At least 10% of active allotments annually	Results summarized every 5 years	Moderate to High	High
		<b>Allotments administered to standard</b>  <u>Status:</u> Number of allotments administered to standard has been reported annually for several years.	Annually	Annually	High	Moderate
Effectiveness		<b>Range condition and trend</b>  <u>Status:</u> Surveys of condition and trend have been ongoing for several years on most allotments and on wildlife winter range along the Wasatch Front; however, in many cases protocols have varied over time.	Annually for some portion of the Forest	Results summarized every 5 years	Moderate	High

Monitoring Topic		Rangeland Health and Management				
Type	Monitoring Question	Indicator	Measurement Frequency	Reporting Frequency	Precision and Reliability	Monitoring Priority
		<b>Riparian condition and trend</b>  <u>Status:</u> Riparian condition/trend surveys have been ongoing for several years on most allotments; however, in many cases protocols have varied over time.	Annually for some portion of the Forest	Results summarized every 5 years	Moderate	High
Implementation	(5) Are infestations of <b>noxious weeds</b> being contained, controlled, or eliminated?	<b>Application of Plan direction and Project mitigation measures including permit, contractual requirements</b>  <u>Status:</u> Mitigation measures for projects are specified in NEPA decision documents. Monitoring protocol will be developed.	At least 1 vegetation management, 1 special use, and 1 range project or activity annually	Results summarized every 5 years	Moderate to High	Moderate
		<b>Acres of weeds treated</b>  <u>Status:</u> Weed treatments have been reported annually for several years.	Annually	Annually	High	High

Monitoring Topic		Rangeland Health and Management				
Type	Monitoring Question	Indicator	Measurement Frequency	Reporting Frequency	Precision and Reliability	Monitoring Priority
Effectiveness		<del>Estimated acres infested.</del>  <u>Status:</u> Estimated acreage by species reported annually for several years.	Every 5 years	Every 5 years	Low	Low to Moderate

**Table 6-4. Soil Productivity Monitoring**

Monitoring Topic		Soil Productivity				
Type	Monitoring Question	Indicator	Measurement Frequency	Reporting Frequency	Precision and Reliability	Monitoring Priority
Implementation and Effectiveness	(6) Is long-term <b>soil productivity</b> being maintained?	<b>Detrimental soil disturbance</b> <del>Status: Protocol will be developed.</del>	At least 1 vegetation management, 1 special use, and 1 range project or activity annually	Results summarized every 5 years	Moderate	Moderate
		<b>Down woody debris</b> <del>Status: Protocol will be developed.</del>	At least 1 vegetation management project or activity annually	Results summarized every 5 years	Moderate	Moderate
		<b>Ground cover</b> <del>Status: Monitored as part of upland condition/trend monitoring. Historical data available on some sites.</del>	Annually for some portion of the Forest	Results summarized every 5 years	Moderate	High

**Table 6-5. Watershed Health and Function Monitoring**

Monitoring Topic		Watershed Health and Function				
Type	Monitoring Question	Indicator	Measurement Frequency	Reporting Frequency	Precision and Reliability	Monitoring Priority
Implementation	(7) Is water quality being adequately protected and meeting desired conditions?	<b>Application of Best Management Practices designed to protect or improve water quality.</b>  <u>Status:</u> Protocol will be developed.	At least 1 vegetation management, 1 special use, and 1 range project or activity annually	Results summarized every 5 years.	Moderate	Moderate
Effectiveness		<b>Compliance with water quality standards</b>  <u>Status:</u> Water quality has been monitored for many years on several sites and is annually reported to Utah DEQ.	Annually on at least 20% of Forest water quality monitoring sites	Annually	High	High
		<b>Number of 303(d) listed water bodies</b>  <u>Status:</u> State DEQ lists 303(d) listed streams as information indicates the need.	Ongoing	Annually	High	High

**Table 6-6. Air Quality Monitoring**

Monitoring Topic		Air Quality				
Type	Monitoring Question	Indicator	Measurement Frequency	Reporting Frequency	Precision and Reliability	Monitoring Priority
Implementation	(8) Are <del>airsheds</del> on the Forest meeting or trending toward desired conditions?	<b>Forest Service management activities do/don't result in exceedances from established NAAQS standards.</b>  <u>Status:</u> Forest has complied with the Utah Smoke Management Plan which requires modeling of emissions prior to burning, and obtaining clearance from State DEQ.	Annually on at least some prescribed burn activities.	Results summarized every 5 years	Low to Moderate	Low
Effectiveness		<b>Degradation of lichen biomonitoring sites.</b>  <u>Status:</u> 11 biomonitoring sites have been established, another 13 are currently being established.	50% of bio-monitoring sites monitored at least once every 5 years.	Results summarized every 5 years	Moderate	Low
		<b>Exceedances from NAAQS standards.</b>  <u>Status:</u> State has several monitoring stations along the Wasatch Front, data from these is shared on their website.	State air quality sites monitored annually (by UDAQ).	Results summarized every 5 years	High	Moderate



**Table 6-7. Vegetation Health Monitoring**

Monitoring Topic		Vegetation Health				
Type	Monitoring Question	Indicator	Measurement Frequency	Reporting Frequency	Precision and Reliability	Monitoring Priority
Implementation	(9) Are <del>vegetation conditions</del> stable or moving toward desired future conditions?	<b>Clearcut size and timber management practices according to Plan direction</b>  <del>Status:</del> Clearcuts are infrequently conducted on the Forest (primarily in aspen). Size monitoring is ongoing as required by NFMA. Timber management practices are annually reported.	Annually	Annually	High	High
		<b>Prescribed fire and wildland fire use according to Plan direction</b>  <del>Status:</del> Protocol will be developed.	One fire management project is evaluated annually	Results summarized every 5 years	Moderate	Moderate
		<del>Acres of hazardous fuels treated</del>  <del>Status:</del> Hazardous fuel reductions have been reported annually for several years.	Annually	Annually	Moderate to High	High

Monitoring Topic		Vegetation Health				
Type	Monitoring Question	Indicator	Measurement Frequency	Reporting Frequency	Precision and Reliability	Monitoring Priority
		<del>Acreage with approved wildland fire use plan.</del>  <del>Status:</del> Wildland fire use plans have been developed. These may need to be updated for the revised Forest Plan.	Every 5 years	Every 5 years	High	High
Effectiveness		<del>Aspen, spruce/fir, Douglas-fir:</del> a. Extent of conversion (acres) to younger age classes b. Extent and distribution of old and mature c. Extent of insect/disease infestations.  <del>Status:</del> An assessment was completed as part of revision effort. Insect activity is monitored annually.	Every 5 years	Every 5 years	Moderate	High
		<del>Riparian forest types:</del> Extent and distribution of old and mature.  <del>Status:</del> An assessment was completed as part of revision effort.	Every 10 years	Every 10 years	Moderate	High

Monitoring Topic		Vegetation Health				
Type	Monitoring Question	Indicator	Measurement Frequency	Reporting Frequency	Precision and Reliability	Monitoring Priority
		<b>Other forest types:</b> a. Extent and distribution of old and mature b. Extent of insect/disease infestations.  <u>Status:</u> An assessment was completed as part of revision effort. Insect activity is monitored annually.	a. Every 10 years b. Annually	a. Every 10 years b. Every 5 years	Moderate	Moderate
		<b>Sagebrush:</b> Extent and distribution with > 15% sage canopy cover.  <u>Status:</u> An assessment was completed as part of revision effort.	Every 10 years	Every 10 years	Moderate	Moderate
		<b>Other rangeland types:</b> Extent, distribution, and trend.  <u>Status:</u> An assessment was completed as part of revision effort.	Every 10 years	Every 10 years	Moderate	Low

**Table 6-8. Fire Management Monitoring**

Monitoring Topic		Fire Management				
Type	Monitoring Question	Indicator	Measurement Frequency	Reporting Frequency	Precision and Reliability	Monitoring Priority
Effectiveness	(10) Are management activities effective in preventing excessive catastrophic fire events?	<del>Acreage of human and naturally ignited wildland fire and wildland fire use.</del>  <del>Status: Reported annually for many years.</del>	Annually	Results summarized every 5 years.	High	High
		<del>Fire condition classes</del>  <del>Status: Recently reevaluated.</del>	Every 5 years	Every 5 years	Moderate	Moderate

**Table 6-9. Socio-Economic Monitoring**

Monitoring Topic		Socio-Economic				
Type	Monitoring Question	Indicator	Measurement Frequency	Reporting Frequency	Precision and Reliability	Monitoring Priority
Implementation	(11) Are <del>goods and services</del> being provided in accordance with Forest Plan goals and objectives?	<del>Allowable Timber Sale Quantity (ASQ)</del>	Annually	Annually	High	High
		<del>Total Timber Sale Program Quantity</del>	Annually	Annually	High	High
		<del>Other Forest Products (Fuelwood and Christmas Tree Permits)</del>	Annually	Annually	High	High
		<del>Level of permitted livestock grazing</del>	Annually	Annually	High	High
		<del>Acres leased for oil and gas exploration</del>	Annually	Annually	High	High
		<del>Number of Recreation Special Use Permits</del>	Annually	Annually	High	High
		<del>Number of Lands Special Use Permits</del>	Annually	Annually	High	High

**Table 6-10. Heritage and Cultural Resources Monitoring**

Monitoring Topic		Heritage and Cultural Resources				
Type	Monitoring Question	Indicator	Measurement Frequency	Reporting Frequency	Precision and Reliability	Monitoring Priority
Implementation	(3) Are <b>National Register eligible sites</b> and districts being protected?	<del>Mitigation measures including pre-disturbance surveys applied/not applied</del>  <del>Status: Project areas are surveyed prior to disturbance. Mitigation for potentially affected sites is outlined in NEPA documents.</del>	At least 1 vegetation management, 1 special use and 1 range project or activity annually.	Results summarized every 5 years	Moderate	High
Effectiveness		Unapproved impacts to sites				

**Table 6-11. Recreation Monitoring**

Monitoring Topic		Recreation				
Type	Monitoring Question	Indicator	Measurement Frequency	Reporting Frequency	Precision and Reliability	Monitoring Priority
Implementation	(12) Are we providing a diversity of recreational opportunities while protecting natural resources? Are conflicts between user groups minimal?	<b>Acreage with approved Travel Management Plan</b>  <u>Status:</u> Travel Management Plans will be developed/revised for all portions of the Forest.	Annually	Every 5 years	High	Moderate
		<b>Miles of non-motorized trail</b>  <u>Status:</u> Location and mileage of trails are currently being refined.	Annually	Annually	Moderate	High
		<b>Miles of motorized trail and road opportunities</b>  <u>Status:</u> Location and mileage of trails are currently being refined.	Annually	Annually	Moderate	High
		<b>Miles of trails groomed for winter use</b>  <u>Status:</u> Protocol will be developed.	Annually	Annually	Moderate	Moderate
		<b>Trailheads maintained for winter use</b>  <u>Status:</u> Protocol will be developed.	Annually	Annually	High	Low
		<b>Campground capacity</b>  <u>Status:</u> Reported annually for many years.	Annually	Annually	High	High

Monitoring Topic		Recreation				
Type	Monitoring Question	Indicator	Measurement Frequency	Reporting Frequency	Precision and Reliability	Monitoring Priority
Effectiveness		<b>Developed recreation sites meeting accessibility (ADA) standards.</b>  <u>Status:</u> Has been monitored for several years, but standards have not been constant.	Every 5 years	Every 5 years	Moderate	High
		<b>Day-use developed site capacity</b>  <u>Status:</u> Reported annually for many years.	Annually	Annually	High	High
		<b>Scenery Management Objectives compliance</b>  <u>Status:</u> Protocol will be developed.	At least 1 vegetation management, 1 special use, and 1 range project or activity annually	Results summarized every 5 years	Moderate	Moderate
		<b>Compliance with travel management direction</b>  <u>Status:</u> Violation Notices have been reported for several years.	Annually	Every 5 years	Moderate to Low	Moderate
		<b>Compliance with wilderness direction</b>  <u>Status:</u> Protocol will be developed. Violation notices have been recorded in data bases.	Every 5 years	Every 5 years	Moderate to Low	Low



Monitoring Topic		Recreation				
Type	Monitoring Question	Indicator	Measurement Frequency	Reporting Frequency	Precision and Reliability	Monitoring Priority
		<b>Non-Forest Service participant assistance in compliance, education and enforcement</b>  Status: Protocol will be developed.	Every 5 years	Every 5 years	Moderate	Low

**Table 6-12. Roads and Access Monitoring**

Monitoring Topic		Roads and Access				
Type	Monitoring Question	Indicator	Measurement Frequency	Reporting Frequency	Precision and Reliability	Monitoring Priority
Implementation	(13) Is adequate <del>access</del> to and across the Forest being provided?	<b>Miles of classified road</b> <del>Status: Inventory recently updated.</del>	Annually	Annually	High	Moderate
		<b>Miles of classified road open for public use</b> <del>Status: Inventory recently updated. Will change based on revised travel management direction in the Plan.</del>	Every 5 Years	Every 5 Years	High	Moderate
		<b>Miles of new road construction</b> <del>Status: Reported annually for many years.</del>	Annually	Annually	High	High
		<b>Miles of classified roads reconstructed or relocated</b> <del>Status: Reported annually for many years.</del>	Annually	Annually	High	High
		<b>Miles of classified road maintained</b> <del>Status: Protocol will be developed</del>	Annually	Annually	High	Moderate
		<b>Miles of unclassified road decommissioned</b> <del>Status: Reported annually for several years.</del>	Annually	Annually	High	High

Monitoring Topic		Roads and Access				
Type	Monitoring Question	Indicator	Measurement Frequency	Reporting Frequency	Precision and Reliability	Monitoring Priority
Effectiveness		<b>Miles of unclassified road</b>  <u>Status:</u> Current mileage is a rough estimate. Very dynamic, difficult to develop and maintain an accurate and up-to-date inventory.	Every 10 years	Every 10 years	Low	Moderate





The 2012 planning rule, which is found at 36 Code of Federal Regulations (CFR) 219, guides forest plan monitoring across the Forest Service. The Uinta-Wasatch-Cache National Forest conformance strategy focuses on addressing the purpose of the forest plan monitoring program as described in 36 CFR 219.12(a)(1), which includes the need for monitoring information that enables the responsible official to determine if a change in plan components in the plan area may be needed.

In addition, each forest plan monitoring program must contain one or more monitoring questions and associated indicators addressing each of the following eight requirements, which are noted at 36 CFR 219.12(a)(5):

1. The status of select watershed conditions.
2. The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems.
3. The status of focal species to assess the ecological conditions required at 36 CFR 219.9.
4. The status of a select set of the ecological conditions required under 36 CFR 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.
5. The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives.
6. Measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area.
7. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.
8. 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)).

The purpose of forest plan monitoring and evaluation is to evaluate, document, and report how well we are implementing the forest plan, how well the forest plan is working, and if the forest plan purpose and direction remain appropriate. **Monitoring** determines actual conditions and circumstances and compares them with assumptions and expected or desired results. Second, **evaluation** examines the reasons for the conditions we find and where these do not match desired conditions, identifies potential alternative approaches.

### ***Types of Monitoring***

The monitoring identified in this forest plan is not all of the monitoring conducted on a national forest. Other forms of monitoring, which address other laws, policies, and site-specific decisions are also ongoing. Three categories of monitoring (see Forest Service Manual 1925.21) comprise both forest plan and individual project monitoring:

- **Implementation Monitoring** – Used to determine if plans, prescriptions, projects, and activities were implemented as designed and in compliance with the forest plan;

- Effectiveness Monitoring – Used to determine if plans, prescriptions, projects, and activities are effective in accomplishing Plan goals, and objectives, and moving toward desired conditions; and
- Validation Monitoring – Used in cases of uncertainty to determine if initial data, assumptions, and coefficients used to predict outcomes in the development of the Plan are correct.

Most monitoring at the national forest level is in the first two categories.

### ***Forest Plan Monitoring and Evaluation***

The following tables display the monitoring plan for the 2003 Land and Resource Management Plan for the Uinta National Forest. The forest plan monitoring program identified the plan monitoring questions and associated indicators. Monitoring questions and associated indicators 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. Questions and indicators should be based on one or more desired conditions, objectives, or other components in the plan, but not every plan component needs to have a corresponding monitoring question.

Expected precision and reliability of the monitoring for each area is included as required. (36 CFR 219.12(k)(4)) Two classes of precision and reliability are used:

- **Class A** has methods that are generally well accepted for modeling or measuring the resource or condition. Results are repeatable and often statistically valid. Reliability, precision, and accuracy are very good. The cost of conducting these measurements is higher than other methods. These methods are often quantitative in nature.
- **Class B** methods are based on project records, communications, on-site ocular estimates, or less formal measurements like pace transects, informal visitor surveys, air photo interpretation, and other similar types of assessments. Reliability, accuracy, and precision are good, but usually less than Class A. Class B methods are often qualitative in nature, but still provide valuable information on the status of resource conditions.

We expect to achieve monitoring and evaluation in each of the areas, but actual budget levels and funding mixes (amounts by “program areas” such as recreation, watershed, wildlife, timber, etc.) will affect accomplishment. We may see swings in relative emphasis tied to funding or current issues but we expect to be able to monitor and evaluate some movement toward goals and objectives in each focus area. We also expect that partnerships can be developed to accomplish more in monitoring and evaluation.

**Table ME-1. Uinta National Forest Monitoring Plan**

<b>Monitoring Question</b>	<b>Monitoring Item</b>
Education and information: Are we delivering key education/enforcement messages to forest employees and users? (Key focus areas are: OHV use, recreation user ethics, fire's role/hazardous fuels, noxious weeds, watershed health.)	Number of key messages.
What is visitor satisfaction on Forest Service lands?	Level of visitor satisfaction.
Is adequate access to and across the forest being provided?	<ol style="list-style-type: none"> <li>1. Miles of classified road open for public use.</li> <li>2. Miles of motorized trail.</li> <li>3. Miles of non-motorized trail.</li> </ol>
Are vegetation conditions stable or moving toward desired future conditions?	Forested vegetation, extent of insect/disease infestations.
Fuels reduction: Are fuels reduction projects protecting property, human health and safety, and reducing the potential for unwanted fire effects (in the wildland-urban interface (WUI) and non-WUI)?	<ol style="list-style-type: none"> <li>1. Acres of hazardous fuels reduction in WUI and non-WUI.</li> <li>2. Fire behavior and opportunities for suppression.</li> </ol>
Fire management: Are natural ignitions being managed to accomplish resource management objectives?	<ol style="list-style-type: none"> <li>1. Percent of natural ignitions with identified resource management objective</li> <li>2. Percent of natural ignition acres with resource benefit.</li> </ol>



Monitoring Question	Monitoring Item
Rangeland management: What is the extent of the change of ecological conditions due to invasive species? Do rangeland plant communities have desired species composition and is ground cover adequate?	<ol style="list-style-type: none"> <li>1. Estimated acres infested with noxious weeds.</li> <li>2. Riparian and upland condition and trend.</li> </ol>
Are forest management activities and natural events affecting the ecological conditions indicated by the status of focal species?	<ol style="list-style-type: none"> <li>1. Active goshawk territories.</li> <li>2. Cutthroat trout population estimates.</li> </ol>
Is there a change in species distribution across the forest?	Change from cold water to warm water species, change in terrestrial vegetation and species distribution.
Are forest management activities and/or natural events affecting ecological conditions that 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 concern?	<ol style="list-style-type: none"> <li>1. Mature forest conditions and population estimates (e.g., northern goshawk).</li> <li>2. Aquatic and riparian condition: In-stream channel conditions and population estimates (e.g., Bonneville cutthroat trout and Colorado River cutthroat trout).</li> <li>3. Habitat that contains other federally listed threatened and endangered species, conserve proposed and candidate species, documentation of alterations in habitat due to management actions and natural events.</li> </ol>
Are forest management activities and natural events affecting the ecological conditions of terrestrial and aquatic ecosystems?	<ol style="list-style-type: none"> <li>1. Aquatic habitat conditions.</li> <li>2. Riparian ecosystem conditions.</li> <li>3. Forested terrestrial ecosystem conditions.</li> <li>4. Non-forested terrestrial ecosystem conditions.</li> </ol>

Monitoring Question	Monitoring Item
Are forest management activities and natural events affecting watershed conditions?	<ol style="list-style-type: none"> <li>1. Aquatic Habitat conditions.</li> <li>2. Air Quality - Trends of lichen biomonitoring sites.</li> <li>3. Changes in soil properties (physical, chemical, and biological) that result in the loss of the inherent ecological capacity or hydrologic function of the soil resource.</li> </ol>
NFMA compliance: Are we complying with appropriate NFMA requirements?	Stocking of lands.
Are timber management activities impairing soil productivity of the land?	Changes in soil properties (physical, chemical, and/or biological) that result in the loss of the inherent ecological capacity or hydrologic function of the soil resource. Specific indicators are amount of soil disturbance, change inorganic matter, or change in soil structure, soil temperature, A horizon depth.
Are goods and services being provided in accordance with forest plan goals and objectives?	<ol style="list-style-type: none"> <li>1. Number of lands special use permits.</li> <li>2. Number of recreation special use permits.</li> <li>3. Acres leased for oil and gas exploration and development.</li> <li>4. Level of permitted livestock grazing.</li> <li>5. Other forest products (e.g., fuelwood and Christmas tree permits).</li> <li>6. Total timber sale program quantity.</li> </ol>

Monitoring Question	Monitoring Item
National Historic Preservation Act as amended: Are cultural resources being protected as the forest plan is implemented and are mitigation measures sufficient prevent damage to cultural resources from project activities? Are historic properties receiving adverse effects from project implementation, vandalism, looting, and/or neglect.	Number of historic properties that received new adverse effects from looting, vandalism, and/or neglect.