Land Management Plan for the Apache-Sitgreaves National Forests
Administrative Change #1
CHANGE PAGES
2012 Planning Rule Monitoring Program Transition
June 21, 2016

This Administrative Change to the 2015 Land Management Plan for the Apache-Sitgreaves National Forests brings the plan's Monitoring Strategy into conformance with the monitoring requirements of the 2012 Planning Rule (36 CFR 219). The 2012 Planning Rule is being used to adjust the Monitoring Strategy in the revised 2015 Land Management Plan. The 2012 Planning Rule allows for corrections or adjustments to the Forest Plan using a process called "administrative change." "An administrative change is any change to a plan that is not a plan amendment or revision. Administrative changes include corrections of clerical errors to any part of the plan, conformance of the plan to new statutory or regulatory requirements, or other content in the plan (219.7(f))" (36 CFR 219.13(c). Monitoring under the 2012 Planning Rule is considered to be other plan content (36 CFR 219.7(f)(1)(iii)).

These change pages may be used to replace the original pages in the printed documents. Note that page 162 has no changes but is included for 2-sided printing. An updated electronic version (PDF) of the Land Management Plan will be posted to the Forests' website at a later date. Pages which have been changed are identified in the page footers, and the date of the change (June 21, 2016) has been included.

Commonly Used Acronyms

ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
ADWR	Arizona Department of Water Resources
AZGFD	Arizona Game and Fish Department
AMS	Analysis of the Management Situation
ASQ	Allowable Sale Quantity
BAER	Burned Area Emergency Response
BLM	Bureau of Land Management
BMP	Best Management Practice
CCF	100 Cubic Feet
CCVA	Climate Change Vulnerability Assessment
CER	Comprehensive Evaluation Report
CFI	Community-Forest Intermix
CFR	Code of Federal Regulations
CWPP	Community Wildfire Protection Plan
DBH	Diameter at Breast Height
DRC	Diameter at Root Collar
DMCF	Dry Mixed Conifer Forest
EI	Ecological Indicator
EPA	Environmental Protection Agency
EO	Executive Order
ERU	Ecological Response Unit
ESA	Endangered Species Act
FHA	Federal Highway Administration
FIA	Forest Inventory Analysis
FR	Federal Register
FSH	Forest Service Manual
FSM	Forest Service Handbook
GIS	Geographical Information System
GTR	General Technical Report
HUC	Hydrologic Unit Code
IRA	Inventoried Roadless Area
MIS	Management Indicator Species
MSO	Mexican Spotted Owl
MVUM	Motor Vehicle Use Map
NEPA	National Environmental Policy Act
NF	National Forest
NFMA	National Forest Management Act
NFS	National Forest System
NPS	Non-Point source
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NRT	National Recreation Trail
NVUM	National Visitor Use Monitoring
OHV	Off-Highway Vehicle
PAC	Protected Activity Center
PFA	Post-Fledging Family Area

PFC	Proper Functioning Condition
PNVT	Potential Natural Vegetation Type
RMRS	Rocky Mountain Research Station
RNA	Research Natural Area
ROS	Recreation Opportunity Spectrum
SAD	Sudden Aspen Decline
TCP	Traditional Cultural Property
TES	Terrestrial Ecosystem Survey
USC	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USFS	United States Forest Service
WQA	Wildlife Quiet Area
WUI	Wildland-Urban Interface

Chapter 5. Monitoring Strategy

Introduction

The purpose of monitoring and evaluation is to evaluate, document, and report how the land management plan is applied, how well it works, and if its purpose and direction remain appropriate. Monitoring determines actual conditions and compares them with desired conditions. Evaluation of monitoring results may identify that desired conditions are not being met and propose alternative management strategies.

Adaptive management allows the use of alternative solutions to meet desired conditions. It includes defining measurable objectives, monitoring, learning and making changes, and recognizing and adjusting for the uncertainties of outcomes. This "Land Management Plan for the Apache-Sitgreaves National Forests" (the plan) is an integral part of the adaptive management cycle that includes management decisions and actions. Monitoring and evaluating the effects of plan implementation is critical to adaptive management.

The monitoring strategy outlines the general framework for achieving plan monitoring and includes the monitoring questions and select monitoring methods listed in the following section. Monitoring questions focus on key plan decisions where carrying out projects and activities are likely to cause a change over time. It does not address project level implementation monitoring nor is it intended for research purposes. The adaptive management cycle also includes an approach for responding to changing conditions or public desires and to new information, including research and scientific papers.

The forest supervisor evaluates the monitoring information displayed in the evaluation reports through a management review and determines if any changes are needed in management actions or the plan itself. In general, biennial evaluations of the monitoring information consider the following questions:

- What are the effects of resource management activities on the productivity of the land?
- To what degree are resource management activities maintaining or making progress toward the desired conditions and objectives identified in the plan? Are costs of implementing programs occurring as predicted?
- What modifications are needed to account for unanticipated changes in conditions?

The plan is revised at least every 15 years and the forest supervisor may amend the plan at any time. All of the monitoring and evaluation timeframes identified in this chapter begin from the date of the record of decision.

The monitoring and evaluation strategy (plan decisions) below is displayed in table 12. The information outside of this table is not a plan decision but is provided for background.

Monitoring Strategy

Table 12 presents the monitoring questions, monitoring methods, and the frequency of measurements needed to address monitoring requirements identified in the provisions of the 2012

Planning Rule[1] to help evaluate the plan and movement toward key desired conditions. In some cases, the monitoring questions and monitoring methods directly measure the accomplishment of meeting desired conditions. In other cases, they measure objectives or guidelines associated with desired conditions.

This monitoring strategy provides guidance in determining monitoring requirements and accomplishments. Monitoring intervals were chosen based on data availability and rate of change of variables to be measured. Some questions with evaluations occurring at monitoring intervals longer than 1 year may require annual data collection. Forest managers may need to prioritize what would be monitored in any given year and would schedule monitoring and evaluation through the annual budget process. Actual budget levels, funding emphasis, and emergence of new issues may affect accomplishment. Partnerships may be developed to accomplish monitoring and evaluation.

Table 12. Apache-Sitgreaves NFs land management plan monitoring questions, monitoring methods and indicators, and monitoring intervals.

Monitoring Questions	Monitoring Method and Indicators	Monitoring Interval
Maintenance and Improvement of Ecosystem Health		
1. Are long-term soil health and productivity desired conditions being maintained or met?	Review a sample of soil-disturbing activities for compliance with best management practices (BMPs) by project and allotment operating instruction implementation.	Annually
2. How well are management activities contributing to desired conditions or maintaining watersheds in a healthy state and meeting Arizona water quality standards?	Review a sample of soil-disturbing activities for compliance with BMPs by project; allotment operating instruction implementation; Section 18 reviews of allotment National Environmental Policy Act (NEPA); burn area emergency response (BAER) assessments; and Arizona Department of Environmental Quality water quality data.	Every 5 years
3. How are management activities contributing to desired conditions or affecting riparian habitats, including wetlands, on the forests? Are riparian areas attaining and/or moving toward proper functioning condition? Are identified ecological indicators (e.g., aspen, riparian) present and fulfilling their ecological function?	Review a sample of ground-disturbing activities for compliance with BMPs by project; allotment operating instruction implementation; prescribed fire burn plan implementation; proper functioning data or other approved Forest Service methodologies; and Section 18 reviews of allotment NEPA. Monitor riparian habitats for changes in ground cover, species composition, bank stability, and water quality.	Every 5 years
4. Are management activities contributing to desired conditions or improving air quality across the forests in Class 1 (Mount Baldy Wilderness) and Class II airsheds?	Review interagency monitoring of protected visual environments' data.	Annually

[1] The transition provision, 36 CFR § 219.17(b)(3), of the 2012 Planning Rule (77 FR 21162-21276) allows use of the provisions of the planning rule, commonly called the 1982 Planning Rule, to amend or revise plans.

Monitoring Questions	Monitoring Method and Indicators	Monitoring Interval
5. Are habitats for threatened, endangered, sensitive, and other species for the forests being maintained or enhanced; meeting recovery objectives; moving toward desired conditions; and contributing to species viability?	Review implementation of biological opinion terms and conditions and aquatic habitat and population surveys using current approved methodologies. Review implementation and evaluate effectiveness of project mitigation measures affecting habitat.	Annually, on selected newly implemented and ongoing activities
6. Are PNVTs and habitat needs being provided for and contributing to desired conditions? What percent of grasslands have more than 10 percent of encroachment of woody species?	Review mid-scale vegetation assessment and percent change; stand exam data; post-prescribed fire monitoring plots; forest inventory analysis (FIA) plots; change in species composition and soil condition (range data); and acres of restored grassland.	Every 5 years
7. What is the effect of management upon habitat trends of ecological indicators (aspen, riparian) across the forests?	Conduct aspen/riparian monitoring in accordance with species' specific protocols in both treated and untreated areas and in burned (within large wildfire burns) and unburned areas. Interdisciplinary team review the annual aspen/riparian ecological indicator species monitoring reports to determine trend.	Annually Every 5 years
8. How are management activities affecting late successional forest structure in relation to desired conditions?	Review amount and type of restoration treatments and the mid-scale vegetation assessment and percent change; FIA plots; post-prescribed fire monitoring plots; BAER assessments; and percent departure from desired condition by PNVT.	Every 5 years
9. What is the status of Mexican spotted owls as a focal species?	Information on breeding Mexican spotted owl occupancy in areas where they are known to occur and surveys or inventory efforts where their occupancy status is unknown (or areas presumed to be abandoned) will allow us to make inferences regarding the overall status of this species in mixed conifer PNVTs. Conduct project and non-project area monitoring of Mexican spotted owl protected activity centers in accordance with species-specific protocols.	Annually
10. What is the status of northern goshawks as a focal species?	Information on breeding northern goshawk occupancy in areas where they are known to occur and surveys or inventory efforts where their occupancy status is unknown (or areas presumed to be abandoned) will allow us to make inferences regarding the overall status of this species in the ponderosa pine PNVT. Conduct project and non-project area monitoring of northern goshawk post-fledging areas in accordance with species-specific protocols.	Annually
11. What is the status of American pronghorn as a focal species?	To assess grassland PNVT habitat connectivity, obtain AZGFD population distribution data for American pronghorn populations.	Annually

Monitoring Questions	Monitoring Method and Indicators	Monitoring Interval
12. Are management activities contributing to progress towards desired conditions for grassland habitat during the fawning period for American pronghorns?	Review AZGFD data for American pronghorns, including fawn:doe ratios and population trends.	Annually
13. Are management activities moving vegetation communities and habitats closer to the desired condition identified at the appropriate scales as compared to baseline conditions?	Review mid-scale vegetation assessment/percent change in developmental structural states, range analyses (transect data, photo plots, inspections), Forest Inventory and Analysis, Common Stand Exams, production and utilization surveys; Section 18 reviews of allotment NEPA; BAER assessments; fuels inventory; acres of aspen dominated and codominated forested PNVTs; and percent departure from desired condition by PNVT. Review data sources listed above for departure or PNVT changes not explained by mechanical treatment, wildfire, natural succession or other ground disturbing event, as compared to baseline mid-scale (2012). Review applicable indicators for all PNVTs: seral state diversity, ground cover, ecological status, patch size, disturbance regime (fire, insect, disease, flooding), coarse woody debris, snag density, fire regime condition class, riparian function assessment.	Every 5 years
14. Is long term water quality (temperature) being maintained in aquatic systems to meet State of Arizona water quality standards for designated uses? What temperature change is attributed to climate vs. mechanical/wildfire treatments? Are water temperature changes correlated with climate vulnerability predictions for ASNFs watersheds?	Analyze forest stream temperature network data in comparison to available air temperature and streamflow data. Compare long-term trends in ADEQ monitoring data with forest monitoring data and CCVA predictions.	Every 5 years
15. Are insect and disease populations within reference conditions? Are invasive plant species' populations changing substantially? Are their population levels compatible with achieving vegetation desired conditions and management approaches? Are changes and levels consistent with regional changes and levels? What is the relationship between these stressors and climate vulnerability predictions?	Review forest health surveys and report, stand exams, project inspections and reviews, and noxious weeds and nonnative invasive species surveys and treatment reports. Compare ASNFs to Southwest Region insect and disease population levels and trends to determine if change can be attributed to general decline in forest health in high vulnerability ERUs.[2]	Annually, forestwide Every 5 years

[2] Ecological Response Unit (ERU) is equivalent to PNVT; ERU nomenclature has been updated.

Monitoring Questions	Monitoring Method and Indicators	Monitoring Interval
16. Has ASNFs' Climate Change Vulnerability Assessment (CCVA) by ERU changed over the life of the forest plan? How do current climate patterns, over the life of the forest plan, compare to vulnerability predictions for the ASNFs?	Compare CCVA assessments over time to determine change in vulnerability by ERU, local unit and sub-watershed.	Every 5 years
17. Has timber suitability classification changed on any forests' lands?	Reapply timber suitability criteria and process.	Every 10 years
18. Are forest and woodland stands adequately restocked within 5 years of final harvest treatment or after fire-created regeneration openings? Are these restocked areas retaining species composition and density compared to baseline PNVT? Are stocking patterns correlated with climate vulnerability predictions?	Review annual reforestation needs report, stocking certifications, silvicultural prescriptions, timber/silvilculture tracking database. Assess species composition and density in restocked areas relative to baseline PNVT range of variability.	Every 5 years
19. How is harvest unit size affecting landscape patterns across the forests?	Review mid-scale vegetation assessment and percent change.	Every 5 years
Managed Recreation		
20. Do recreational opportunities respond to forest users' desires, needs, and expectations?	Review recreation use surveys and acres by recreation opportunity spectrum (ROS).	Every 5 years
21. How are recreational activities (including off-highway vehicle use) affecting the physical and biological resources of the forests?	Review law enforcement warnings and citations regarding resource damage; amount of soil surface cover on routes or areas closed to motor vehicle travel; acres of noxious weeds and invasive nonnative species treated in developed campgrounds and dispersed camping areas; and trail condition surveys.	Annually
22. How are projects and programs affecting scenic integrity?	Conduct management reviews.	Annually
23. Are the forests' infrastructure (e.g., recreation facilities, roads, trails) and their ability to facilitate administrative needs and attainment of desired conditions for administrative uses and recreational opportunities, including access, sustainable?	Estimate amount of deferred maintenance (recreation and transportation).	Every 5 years
24. Are eligible and suitable wild and scenic rivers being managed to protect and enhance the identified outstandingly remarkable values?	Conduct management reviews of projects and ongoing activites within river corridors.	Every 2 years

Monitoring Questions	Monitoring Method and Indicators	Monitoring Interval
25. Are designated wilderness and the primitive area being managed to maintain the wilderness values and character?	Conduct management reviews of projects and ongoing activities within designated wilderness and the primitive area.	Every 2 years
26. Are recommended wilderness being managed to protect the wilderness values and character?	Conduct management reviews of projects and ongoing activities within recommended wilderness.	Every 2 years
Community-Forest Interaction		
27. How well are the forests interacting and planning in cooperation with communities?	Conduct management reviews and review number of tribal agreements and acres of community wildfire protection plan treated. Review number of grants, agreements, and volunteers and type of resource benefit.	Every 5 years
28. Do the forests provide interpretive opportunities that describe natural resources and the Forest Service mission?	Review number and type of interpretive programs conducted.	Every 5 years
29. Are outputs of goods and services being produced at a rate consistent with projections?	Review allowable sale quantity (ASQ) compared to actual sale quantity; number of firewood permits issued; number of cords of firewood sold; tons of biomass sold; number of Christmas tree permits sold; number of livestock permitted and actual use records; and number of forest products permits issued.	Every 5 years
Other		
30. Are there changes that have resulted in unforeseen issues requiring plan amendments?	Review the number of forest plan amendments and conduct a content analysis on those amendments.	Every 5 years
31. Are plan objectives being achieved?	Report completed accomplishments toward meeting plan objectives.	Annually
32. Are the standards and guidelines prescribed being incorporated in NEPA documents and implemented in projects and activities?	Review the number of forest plan amendments and NEPA decision documents that deviate from forest plan standards and guidelines. Conduct management reviews of selected projects and activities.	Annually
33. What is the condition of archaeological sites and traditional cultural properties on ASNFs?	Inventory and assessment of cultural resources from surveys conducted pre- and post- project and program monitoring; and stewardship actions taken, including preservation, stabilization, research, interpretation, partnerships, volunteer opportunities, and other forms of public outreach.	Every 2 years

Old tree – Any native tree established before natural disturbance patterns were notably altered by Euro-American settlement (generally between 1850 and 1890 on the Apache-Sitgreaves NFs). Such a tree exhibits all or most characteristics of overmaturity for its species, and/or has tree rings revealing its advanced age. For example, old ponderosa pine trees display the following: yellow/orange plates widened between bark furrows, horizontal to drooping limbs, rounded crown tops, and gradual bole taper (see Keen's tree class number 4 in appendix B).

Openings – Generally persistent treeless areas having a fairly distinct shape or size, occurring naturally due to differences in soil types as compared to sites that support forests or woodlands. Openings include meadows, grasslands, rock outcroppings, and wetlands. In contrast, created openings result from disturbances like severe fire or windthrow, or management activities to intentionally create space for new tree regeneration. Natural and created openings are not the same as interspaces found in the frequent-fire forests or woodlands. See "interspaces."

Other energy development – Infrastructure associated with the provision or transport of energy (e.g., biomass power generation, wind turbines, solar panels).

Outstanding Arizona Waters – Surface water designated by Arizona Department of Environmental Quality as an outstanding State water resource. These are waters with exceptional quality where water quality should not be degraded.

Patches – Areas larger than tree groups in which the vegetation composition and structure are relatively homogeneous. Patches compose the mid-scale, thus they range in size from 100 to 1,000 acres.

Phenotype – The visible characteristics of an organism resulting from the interaction of its genetic makeup and environment.

Plan set of documents – The complete set of documentation supporting the land management plan; it may include, but is not limited to, evaluation reports, documentation of public involvement, the plan including applicable maps, applicable plan improvement documents, applicable NEPA documents, and the monitoring program for the plan area.

Planned ignition – The intentional initiation of a wildland fire by hand-held, mechanical, or aerial device where the distance and timing between ignition lines or points and the sequence of igniting them is determined by environmental conditions (e.g., weather, fuel, topography), firing technique, and other factors which influence fire behavior and fire effects. See prescribed fire.

Planning period – The life of the plan, generally 10 to 15 years from plan approval.

Potential natural vegetation type (PNVT) – Coarse-scale groupings of ecosystem types that share similar geography, soils, vegetation, and historic ecosystem disturbances such as fire, drought, and grazing by native species. PNVTs represent the vegetation type and characteristics that would occur when natural disturbance regimes and biological processes prevail. Ecological Response Unit (ERU) is equivalent to PNVT; ERU nomenclature has been updated.

Prescribed fire – A wildland fire originating from a planned ignition to meet specific objectives identified in a written and approved prescribed fire plan for which NEPA requirements (where applicable) have been met prior to ignition. See planned ignition.

Primitive recreation – Reliance on personal skills and nonmotorized and non-mechanized means to travel and camp in an area, rather than reliance on facilities or outside help.

Priority 6th level (subwatershed) HUC watershed – The designated watersheds (subwatersheds) where restoration activities will concentrate on the explicit goal of improving watershed condition.

Proper functioning condition (PFC) – Proper functioning condition (PFC) is a qualitative method for assessing the condition of riparian-wetland areas. The term PFC is used to describe both (1) the assessment process or tool and (2) a defined, on the ground condition of a riparian-wetland area:

- (1) The PFC tool is designed to assess if the physical elements (abiotic and biotic) are in working order relative to an area's capability and potential. When these physical elements are in working order, then channel characteristics develop that provide habitat for wildlife and other uses. Functionality comes first; then desired conditions are achieved.
- (2) A riparian-wetland area is considered to be in proper functioning condition when adequate vegetation, landform, or large woody debris is present to:
    - dissipate stream energy associated with high water flow, thereby reducing erosion and improving water quality;
    - filter sediment, capture bedload, and aid floodplain development;
    - improve floodwater retention and groundwater recharge;
    - develop root masses that stabilize stream banks against cutting action;
    - develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and
    - support greater biological diversity (Bureau of Land Management, 1998).

Proposed Species – Any species of fish, wildlife, or plant that is proposed in the Federal Register to be listed under section 4 of the Endangered Species Act.

Range condition – The present state of vegetation of a range site in relation to the climax (potential natural) plant community for that site. It is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a plant community resemble that of the climax plant community for the site (Forest Service 1999). Range condition as evaluated and ranked by the Forest Service, is an adjective expression of the status or health of the vegetation and soil relative to the combined potential to produce a sound and stable biotic community. Soundness and stability are evaluated relative to a standard that encompasses the composition, density, and vigor of the vegetation and physical characteristics of the soil. The adjectives that describe range condition are: excellent, good, fair, poor and very-poor (FSH 2209.21, Southwestern Region). According to Holechek et al. (1989), range condition is measured in degrees of departure from climax; excellent range condition would represent climax, and very-poor range condition would represent the greatest departure from climax.

Recreation opportunity spectrum (ROS) – A framework for defining the types of outdoor recreation opportunities the public might desire, and identifies that portion of the spectrum a given national forest area might be able to provide. The ROS map can be found in the plan set of documents. The broad classes are: