

Table 6-2. Monitoring matrix.

Requirement	Purpose	Activity/ Output Monitored	Unit of Measure	Monitoring Frequency	Precision/ Reliability
A quantitative estimate of performance, comparing outputs/services with those projected in the Forest Plan	To compare planned and actual accomplishments	Various	Various	Annual	High/High
Document effects of implementing prescriptions, including significant changes in productivity of the land	To determine effects of implementing Plan prescribed practices and standards and guidelines	Various	Various	Annual	Moderate/ Moderate
Document actual versus estimated costs of implementing the Forest Plan	To verify unit costs for use in Plan revisions and budgeting	Unit costs of implementing practices and activities	Dollars	Annual	High/High
Evaluate how well prescriptions, practices, and standards and guidelines have been applied on the ground	To determine if prescribed practices and standards and guidelines are being applied correctly	Various	Various	Annual	Moderate/ Moderate
Lands are adequately restocked as specified in the Plan	To assure lands are adequately stocked with desired species within 5 years of regeneration harvest	Regeneration	Acres	3 years after reforestation	High/High
Determine size of timber harvest areas	To determine if standards and guidelines for maximum harvest area size are adequate	Harvest unit size	Acres	Annual	High/High
Lands identified as not suited for timber production are examined to determine if they are now suited	To review status of lands unsuited for timber production for possible return to timber production	Lands classified as unsuited for timber production	Acres	Every 10 years	Moderate/ Moderate
Destructive insects/disease	So destructive organisms do not increase to potentially damaging levels following management activities	Populations and occurrence of destructive organisms	Acres affected and severity	Annual	Moderate/ Moderate
Population trends and some nesting-success trends of MIS	To determine the effect of management activities on habitats and populations	MIS	Acres of suitable habitat, populations and some nesting-success measurements	Annual	Moderate/ Moderate

Requirement	Purpose	Activity/ Output Monitored	Unit of Measure	Monitoring Frequency	Precision/ Reliability
Population trends of federally listed threatened, endangered and sensitive species and species with viability concerns	To determine changes in populations resulting from management, and the need to add or remove species from listing	Threatened, endangered and sensitive species	Acres of suitable habitat or populations	As needed to support species recovery plans	Moderate to High
Effects of Forest management on adjacent land resources and communities, and effects of management of nearby lands administered by other government agencies on Forest management	To identify emerging issues, concerns and opportunities for agency coordination	Various effects and issues	None	Annual	Moderate/ Moderate
Identify and obliterate roads not needed for administration and public use	To identify and obliterate unneeded roads	Roads to be obliterated/ roads obliterated	Miles	Annual	High/High
Identify research needs to support or improve Forest management	To determine research needs	Research needed, in progress, and accomplished	Various	Annual	Moderate/ Moderate
Response to revision topic: Watershed resources and Ohio & Mississippi Rivers floodplain management	To determine effectiveness of wetland and floodplain standards and guidelines in protecting wetland habitat and hydrology	Reports from Forest Service, cooperating agencies and user groups regarding the quality of the habitat, conditions, trends and other elements of the habitat	Subjective analysis and documented observations of effects of management	Annual	Moderate/ Moderate
Watershed Resources: Potable water-supply watershed	To determine effectiveness of standards and guidelines in protecting and restoring water quality for watersheds that provide local drinking-water supplies	Reports from Forest Service, cooperating agencies and user groups regarding the quality of the water, including conditions, trends, sediment load and other elements of the water quality	Subjective analysis and documented observations of effects of management	Annual	Moderate/ Moderate
Watershed resources: riparian ecosystems	To determine effectiveness of filter-strip guidelines in reducing sedimentation and improving water quality	Surface-disturbing management practices implemented within filter strips	Various including bare-soil exposure elements	Annual	Moderate/ Moderate

Requirement	Purpose	Activity/ Output Monitored	Unit of Measure	Monitoring Frequency	Precision/ Reliability
Response to revision topic: Biological diversity and wildlife and aquatic habitat: Threatened, endangered and sensitive species and species with viability concerns	To determine effectiveness of standards and guidelines in promoting recovery and contributing to viability	Reports from Forest Service and cooperating agencies regarding habitat condition and suitability	Various	Annual	Moderate/ Moderate
Biological diversity and wildlife and aquatic habitat: Identify and protect ecosystems and communities at risk of loss or degradation	To determine if recreational practices or management activities are causing degradation to rare ecosystems or communities, or other resources	Reports from Forest Service, researchers, cooperating agencies and others regarding habitat condition and suitability	Various	Annual	Moderate/ Moderate
Biological diversity and wildlife and aquatic habitat: Key successional-stage habitats being provided	To determine if the balance between early, mid- and late-successional habitat conditions is appropriate	Reports from Forest Service, researchers, cooperating agencies and others regarding habitat condition and stability	Various	Annual	Moderate/ Moderate
Biological diversity and wildlife and aquatic habitat: Aquatic habitats	To determine if the status and trend in aquatic habitat conditions are suitable	Reports from Forest Service, researchers, cooperating agencies and others regarding habitat condition and stability	Various	Annual	Moderate/ Moderate
Biological diversity and wildlife and aquatic habitat: Invasive species control	To determine if standards and guidelines for the control of invasive species are effective	Reports from Forest Service, researchers, cooperating agencies and others regarding habitat condition and suitability	Various	Annual	Moderate/ Moderate
Biological diversity and wildlife and aquatic habitat: MIS	To determine if the MIS list effectively portrays the elements of habitat and ecosystem quality, along with offering the potential to be effectively monitored	Reports from Forest Service researchers, cooperating agencies and others regarding changes in habitat and ecosystem condition	Various	Annual	Moderate/ Moderate
Biological diversity and wildlife and aquatic habitat: Pesticide use for fish and wildlife habitat improvement	To determine if site-specific analysis of proposed pesticides use was effectively implemented and provided the desired resource response	Reports from Forest Service, cooperating agencies and others regarding site-specific effects of pesticide application	Acres of habitat treated	Annual	Moderate/ Moderate

Requirement	Purpose	Activity/ Output Monitored	Unit of Measure	Monitoring Frequency	Precision/ Reliability
Biological diversity and wildlife and aquatic habitat: Species of recreational interest	To determine how Forest management affects species of recreational interest	Reports from cooperating agencies on whitetail deer, wild turkey and largemouth bass	Various	Annual	Moderate/ Moderate
Response to Revision Topic: Recreation management: Non-motorized designated trail system for hikers, equestrians and bicycles and restriction of equestrians and bicycles to trails	To determine if system trails are designed for the appropriate user-type, protecting resources, and marked, maintained and mapped to meet user needs	Reports from Forest Service, user groups, cooperating agencies and others regarding the condition of trail system	Miles of trail meeting design and maintenance standards	Annual	Moderate/ Moderate
Recreation management: Licensed motorized vehicle use	To determine if vehicular and non-motorized uses on low-maintenance road system are adversely affecting resources	Use on maintenance-level 1 and 2 roads	Road condition, use-encounters, accidents reported	Annual	Moderate/ Moderate
Recreation management: Level of use of trail system	To determine if use-level is appropriate to protect resources and manage user encounters	Reports from Forest Service, user groups, cooperating agencies and others on use of trails	Use-levels on trails, encounter reports, observations	Annual	Low/Moderate
Recreation management: Recreation demand	To determine if recreational facilities meet user needs and recreational demands, as well as protect resources	Recreational facility use and condition, recreational activities	Numbers of recreational facilities meeting standard, of users of some areas, of annual use in number of visits	Annual to every five years	Moderate/ Moderate
Recreation management: Heritage resources	To identify areas that have significant historical or archeological resources and eligibility for the National Register of Historic Places	Areas determined to be potentially eligible, nominated and/or accepted	Numbers and acres	Annual	High/High
Recreation management: Sanitation	To determine if potable water standards are being met where provided, and determine if sewage disposal is being accomplished	Water and sewage testing results	Number of satisfactory and unsatisfactory tests	Annual	High/High

Requirement	Purpose	Activity/ Output Monitored	Unit of Measure	Monitoring Frequency	Precision/ Reliability
Recreation management: Safety and security	To determine if security and protection levels for forest visitors and facilities are adequate	Citation or violations notices issued, along with reported incidents	Number and type	Annual	High/High
Response to revision topic: Forest ecosystem health and sustainability: Land suitable for timber production	To determine if the allocation of land to the suitable timber base is appropriate	Acres of land allocated to special management prescriptions and considered unsuited for timber production	Acres	Every 10 Years	Moderate/ Moderate
Forest ecosystem health and sustainability: Oak-hickory forest-type	To determine if the objective of maintaining the dominance of the oak-hickory forest-type is being achieved	Regeneration samples within regeneration sites that have occurred through timber harvest or ecosystem restoration	Acres dominated by the oak-hickory forest-type	Annual	High/High
Forest ecosystem health and sustainability: Invasive species control	To determine if invasive and exotic species are adversely affecting forest ecosystem health and sustainability	Reports from Forest Service, researchers, cooperating agencies and others regarding habitat condition and suitability	Acres dominated by invasive species	Annual	Moderate/ Moderate
Forest ecosystem health and sustainability: Fire-dependent communities	To determine if the stability of fire-dependent communities is being maintained	Reports from Forest Service, researchers, cooperating agencies and others regarding habitat condition and stability	Acres of prescribed fire	Annual	Moderate/ Moderate
Response to revision topic: Mineral resources	To determine the status of mineral exploration and development on the federal mineral estate	National Forest records related to leases, permits and contracts, along with inspection records related to sites of potential development	Number of leases, permits, or contracts, along with description of activities	Annual	High/High
Response to revision topic: Wilderness, roadless areas, wild and scenic rivers: Roadless evaluation	To determine if Burke Branch, Camp Hutchins, Ripple Hollow, or other areas have changed in a manner that would meet roadless characteristics	Roadless evaluation criteria and status of roads, land-base and other physical features	Narrative related to evaluation criteria	Annual to every five years	Moderate/ Moderate
Wilderness, roadless areas, wild and scenic rivers: Wilderness management	To determine if visitor experience needs (e.g., primitive recreational opportunities, solitude), biophysical requirements (e.g., soil/water quality, vegetation), management presence are being met	Soil, water, air, vegetation quality, recreational use	Various	Annual	Moderate/ Moderate

Wild and scenic rivers: Stream corridors	To determine if management actions and use comply with standards and guidelines for recreational or scenic rivers	Elimination of Incompatible uses	Numbers and types	Annual	High/High
Response to revision topic: Land adjustment: Recreation enhancement	To verify recreation benefits from land adjustment	Recreation capacity added	M-RVDs or number of visits	Every 5 to 7 years	Moderate/ Moderate
Land adjustment: Ecosystem health	To verify benefits to ecosystem health from land adjustment	Acres of restoration or protection opportunity	Acres	Annual	High/High
Land adjustment: Threatened, endangered and sensitive species	To verify benefits to species from land adjustment	Species habitat acquired	Acres of habitat for species	Annual	Moderate/ Moderate
Land adjustment: Wetland and floodplain protection	To verify benefits to wetland and floodplains and compliance with E.O. 11988 and 11990.	Wetlands and floodplains acquired or areas with potential for restoration	Acres acquired	Annual	High/High
Land adjustment: Heritage resources	Verify benefits to heritage resources from land adjustment	Potential National Register site acquired	Acres of potential Sites	Annual	Moderate/ Moderate