

# Appendix D

## MONITORING ELEMENTS

MQ #	Monitoring Question	Element	Task #	Method of Collection	Duration/ Frequency	Reporting Interval	Needed Precision	Needed Reliability	Responsibility	Cost	Goal #	Obj. #	Stand. #
1	Are rare communities being protected, maintained, and restored?	Trends in the numbers, locations, abundance and conditions of rare community occurrences by type	1	Schedule site visits to map and track locations, composition and condition of rare communities utilizing standard GIS coverage and NRIS Terra, FSVeg and Fauna databases. Utilize standard reports for Annual M&E reporting.	5-Year Cycle	Annual	Moderate	Moderate	Forest Ecologist or Botanist				
1	Are rare communities being protected, maintained, and restored?	Acres and/or number of occurrences of rare communities treated to maintain or restore desired conditions	2	Visit each at least once every 5 years and determine trend in conditions. Track annual accomplishments with standard tracking systems.	Annual	Annual	Moderate	High	Forest Ecologist or Botanist				
2	Are landscape-level and stand-level composition and structure of major forest communities within desirable ranges of variability?	Status and trend in forest cover acreage by major forest and woodland community type and age class	3	Map and update changes through routine inventories. Monitor acres by major forest and woodland community type and trends? Vegetation data will be frozen and stored in a retrievable format.	Continuous	Annual	Moderate	Moderate	Forest Silviculturist				
2	Are landscape-level and stand-level composition and structure of major forest communities within desirable ranges of variability?	Acres of silvicultural treatments implemented by activity type and forest type	4	Summarize acres of community type utilizing established activity tracking systems.	Continuous	Annual	Moderate	Moderate	Forest Silviculturist				

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2	Are landscape-level and stand-level composition and structure of major forest communities within desirable ranges of variability?	Acres burned (wildland and prescribed fire) by forest type and season of burn compared to desired fire regimes	5	Acres burned (wildland and prescribed) by major forest community type. Maps of prescribed burn units and wildland fires are incorporated into the GIS database annually by the end of the calendar year. Total acres are determined from a GIS query.	Continuous	Annual	Moderate	Moderate	Forest Ecologist, District and Forest FMO				
2	Are landscape-level and stand-level composition and structure of major forest communities within desirable ranges of variability?	Trends in (populations of MIS that were selected as ecological indicators) in relationship to the (major forest community/condition MIS was selected to indicate)	6	Utilize both Breeding Bird Surveys, driving route, and R8 Land Bird Strategy databases to compare frequency and density of each species, to the appropriate habitat condition]	Annual	3 Years	Moderate	Moderate	Forest Biologist				
2	Are landscape-level and stand-level composition and structure of major forest communities within desirable ranges of variability?	Trends in harvest data of MIS that were selected as demand species in relationship to the habitat improvement activities for the species. (deer)	7	Collect data from Kentucky Department of Fish and Wildlife Resources related to annual accomplishments for habitat improvement tracked with standard tracking systems.	Annual	5 Years	Moderate	Moderate	Forest Biologist				
2	Are landscape-level and stand-level composition and structure of major forest communities within desirable ranges of variability?	Trends in populations of MIS selected as species of special interest in relationship to management action to restore the species on the Forest. (pitch pine)	8	Track acres of accomplishments with standard tracking systems.	Annual	3 Years	Moderate	Moderate	Forest Silviculturist				
3	Are high high-elevation habitats being provided?	How many acres of high-elevation habitats exist and what are the trends in their abundance and condition	9	Map and update changes through routine inventories. Monitor acres and trends?	Continuous	Annual	Moderate	Moderate	Forest Silviculturist				

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3	Are permanent grassy openings being maintained?	Total acres of Grassy openings and acres of opening maintenance activity implemented by activity type	10	[Track by standard tracking systems] Field observation of successful establishment of native grass communities in existing fescue fields being converted to native grasses. Use native planting monitoring form on file in S.O.	Continuous	Annual	Moderate	Moderate	Forest Biologist				
3	Are permanent grassy openings being maintained?	Acres of other permanent openings (pasture, ROW, etc.) and acres of maintenance activity implemented by activity type	11	Track acres of condition in GIS & NRIS.	Annually	Annual	Moderate	Moderate	Biology Section				
3	Are key successional stage habitats being provided?	Acreage of existing and potential old-growth by forest community class	12	Rerun Inventory and Monitoring Institute and CISC analysis periodically or as needed	5 years	5 years	Moderate	Moderate	Forest Silviculturist				
4	How well are key terrestrial habitat attributes being provided?	Trends in hard mast production capability	13	Map and update changes in forest composition and condition through routine inventories. Infer mast production capability from the status of older age classes of oak forest community types	Continuous	Annual	Moderate	Moderate	Forest Silviculturist				
4	How well are terrestrial habitat attributes being provided?	Abundance of snags and downed wood	14	Map and update changes in forest age class structure and area impacted by insect and disease through routine inventories. Infer snag and downed wood by the acres of older age class forests and mortality due to insects and disease	Continuous	Annual	Moderate	Moderate	Forest Silviculturist				
4	How well are terrestrial habitat attributes being provided?	Trend in riparian area acreage by forest type and age class distribution.	15	Map and update changes in riparian areas, forest community type and age class distribution.	Continuous	Annual	Moderate	Moderate	Forest Silviculturist				
4	How well are terrestrial habitat attributes being provided?	Acres of vegetation management implemented in riparian areas by activity type	16	Track annual accomplishments with standard tracking system	Continuous	Annual	Moderate	Moderate	Forest Silviculturist				

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5	What is the status and trend in aquatic habitat conditions in relationship to aquatic communities?	Trends in populations of fish and aquatic macro invertebrates	17	Results of systematic stream fish community inventories. Fish species are sampled with electrofishing; aquatic macro invertebrates with snorkeling, nets, surber samplers, and/or other techniques using defined protocols	Populations of aquatic species are monitored at least once every ten years	Annual	Moderate	Moderate	Forest Fisheries Biologist				
5	What is the status and trend in aquatic habitat conditions in relationship to aquatic communities?	Trends in water quality parameters and physical habitat conditions in relationship to aquatic communities	18	Sample water quality, stream stability, streambed structure and coarse woody debris as appropriate during systematic stream fish and aquatic macro invertebrate community inventories.	At least once every 10 years	Annual	Moderate	Moderate	Forest Fisheries Biologist and Hydrologist				
6	What are status and trends of forest health threats on the forest?	Track ambient air quality trends.	19	Query state and federal air quality databases and summarize ambient air quality conditions near the Forest, especially PM2.5, acid deposition, and ozone.	Annual	Annual	High	High	Zone Air Specialist				
6	What are status and trends of forest health threats on the forest?	Monitor effects of air pollution on terrestrial resources, soil, and vegetation.	20	Complete an assessment of watersheds at risk from acid deposition. Collect appropriate soil and/or vegetation information to assess soil nutrient status in high risk areas.	Periodically, as needed	Periodically	Moderate	Moderate	Zone Air Specialist, Soil Scientist, Silviculturist				
6	What are status and trends of forest health threats on the forest?	Conditions and trends of forest fuels and acres of hazardous fuels treated through wildland fire use, prescribed fire, and mechanical treatment	21	Fuel monitoring following Regional protocol. Fuel consumption and acres of hazardous fuels treated through wildland fire use, prescribed fire, and mechanical treatment mapped into the GIS database reports generated through GIS/NRIS FSVeg queries.	Continuous	Annual	Moderate	Moderate	District FMO & Forest FMO				

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6	What are status and trends of forest health threats on the forest?	Compliance with NAAQS air particulate emissions from NF lands [36 CFR 219.27(a)(12)]	22	Quantify PM2.5 emissions from prescribed and wildland fire use. Monitor PM2.5 from a subset of burns to assess effectiveness of smoke modeling results and smoke management practices.	Annually	Annual	Moderate to High	Moderate to High	Forest FMO and Zone Air Specialist				
6	What are status and trends of forest health threats on the forest?	Trends in native insect and disease effects [36 CFR 219(k)(5)(iv),	23	Sample for specific insects or disease as evidence of infestations occurs following established protocols for the organisms of concern. Track Forest Health Monitoring results to identify emerging concerns.	As needed	Annual	Moderate	Moderate	Forest Silviculturist and Forest Health Field Unit				
6	What are status and trends of forest health threats on the forest?	Trends in forest composition and condition that have been associated with these insects and diseases	24	Map and update changes through routine inventories, indicating source of impacts due to native insects and disease. Utilize annualized FIA and Forest Health Monitoring results to validate findings.	Continuous	Annual	Moderate	Moderate	Forest Silviculturist and Forest Health Field Unit				
6	What are status and trends of forest health threats on the forest?	Are planned measures to control destructive insects and disease being achieved? [36 CFR 219.12(k) 5(iv)]	25	Track annual accomplishments with standard tracking system	Annual	Annual	Moderate	Moderate	Forest Silviculturist and Forest Health Field Unit				
6	What are status and trends of forest health threats on the forest?	Trends in the number of occurrences and/or acreage of selected non-native species? [36 CFR 219(k)(5)(iv),	26	Track changes in acreage and conditions of non-native invasive plants mapped and inventoried. Sample for specific non-native insects or disease in anticipation of their occurrence and during infestations. Follow established protocols for the organisms of concern. Track Forest Health Monitoring results to identify emerging concerns.	As needed	Annual	Moderate	Moderate	Forest Ecologist, Forest Silviculturist and Forest Health Field Unit				

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6	What are status and trends of forest health threats on the forest?	Effectiveness of treatments to eliminate or control invasive non-native species?	27	Interdisciplinary review of treatments results	Annually or at conclusion I&DC project as needed	Annual	Moderate	Moderate	Forest Silviculturist and Forest Health Field Unit				
7	What are the status and trends of federally listed species and species with viability concerns on the forest?	Population trends in federally listed species as an indicator of effectiveness of management on recovery of the species [	28	Follow recovery plan and guidance	Seasonal	Annual	High	High	Forest Biologist				
7	What are the status and trends of federally listed species and species with viability concerns on the forest?	Trends in recovery of T&E species. [36 CFR 219.19 (a)(7)]	29	Various methods will be used as appropriate to the species or species group to monitor status, trends and distribution	Various	As information is available	High	High	Forest Biologist and Forest Ecologist				
7	What are the status and trends of federally listed species and species with viability concerns on the forest?	Status and trends in bird communities	30	Breeding Bird Survey occurrence trends for the bird communities	Annual	3 Years	Moderate	High	Forest Biologist				
7	What are the status and trends of federally listed species and species with viability concerns on the forest?	Trends in status and distribution of some viability concern species that are not specifically identified under other elements. Species targeted under this element will be determined through periodic review of each species' status and conservation priority. Priorities will likely vary through the life of the plan as new information is obtained.	31	Various methods will be used as appropriate to the species or species group. Refer to PETS Species Inventory and Monitoring Handbook.	Annual	Annual	Moderate	Moderate	Forest Biologist and Forest Ecologist				
8	What are the trends for demand species and their use?	Trends in the number of permits issued and harvest levels for selected special forest products	32	Compile reports from records of permits issued	Annual	Annual	Moderate	Moderate	Forest Ecologists and Forest Products Staff				
8	What are the trends for demand species and their use?	Fish stocking levels by type and location	33	Collect stocking records from Cooperating State Agency	Annual	Annual	Moderate	Moderate	Forest Fisheries Biologist				

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9	Are high quality, nature-based recreation experiences being provided and what are the trends	Results and trends in user satisfaction ratings [36 CFR 219.21(a)]	34	Analysis of NVJM customer satisfaction data for Day Use, Overnight General Forest Area, and Wilderness programs and local Customer Satisfaction survey tools.	5 years NVJUM - 1 year Local Customer	5 years - update annually	Low - Low	High - Moderate	SO- Recreation Staff				
9	Are high quality, nature-based recreation experiences being provided and what are the trends	Backlog of facility and trail maintenance needs and trends	35	Analysis of INFRA Deferred Maintenance Report and reporting of per cent change in backlog.	Annually	Annual	Moderate	Moderate	SO- Recreation Staff				
9	Are high quality, nature-based recreation experiences being provided and what are the trends	Trends in financial resources needed and available to provide recreational opportunities	36	Analysis of incoming funds - traditional budgets and fee collections - and costs of operations, in view of needs. Reports using INFRA and FFIS, and Trend Tracker data.	Annually	Annual	Low	Moderate	SO- Recreation Staff				
9	Are high quality, nature-based recreation experiences being provided and what are the trends	Trends in health and safety associated with recreation programs	37	Report on meeting critical standards for developed facilities, trails and GFAs.	Annually	Annual	High	Moderate	SO - Recreation Staff				
9	Are high quality, nature-based recreation experiences being provided and what are the trends	Accessibility of developed sites and facilities	38	Summary report of all accessibility complaints and how they are dealt with.	Annually	Annual	Moderate	High	District/SO- Recreation Staff				
10	What are the status and trends of recreation use impacts on the environment?	Illegal or unauthorized recreational uses observed and the effects of these uses	39	Analysis of LEIMARS report - incidents, and warning /violation notices for illegal activities related to recreation - for trends in illegal activity. M & E Report.	Annually	Annual	High - Low Depending of the type, intensity and frequency of activity	High	Recreation Staff SO				
10	What are the status and trends of recreation use impacts on the environment?	Recreation activities contribution to the degradation of terrestrial, aquatic, rare or riparian areas or adversely affecting water quality	40	Evaluation of recreation's possible contribution to particular problems identified by other monitoring elements in this plan. Amount of recreation use and type of activity will be considered. M&E Report. See monitoring questions#1, 5,6,7, 8, 9,15.	Annually	Annual	Moderate	Moderate	Recreation Staff SO and natural resource scientists				

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10	What are the status and trends of recreation use impacts on the environment?	Accelerated sediment delivery and bank instability resulting from dispersed recreation along priority streams/rivers and improvements being made to reduce these impacts where necessary	41	Primarily visual observation of dispersed recreation area/trail condition and documentation of improvement needs. Documentation of riparian improvement needs inventory.	Annually	Annual	Moderate	Moderate	Watershed Staff and Recreation Staff				
11	What is the status and trend of wilderness character?	Trends in air quality related values in Class 2 Wilderness areas [36 CFR 219.27(a)(12)]	42	Water quality sampling; soil and vegetation sampling for acid deposition effects.	Every 5 years	Every 5 years	Moderate	Moderate	Districts, Hydrologist, and Soil Scientist				
11	What is the status and trend of wilderness character?	Is wilderness visitor use within limits that do not impair the values for which the wilderness was established? [36 CFR 219.18(a)]	43	Analyze trends in wilderness visitor use and compile summary report using GIS mapping (number and location of concentrated use areas) and use of visitor satisfaction results using NVUM and wilderness trailhead registration data.	Every 5 years	Every 5 years	Moderate	High	District				
12	What are the status and trend of Wild and Scenic River conditions? Also see Appendix F for Red River	Are free-flowing conditions being protected?	44	Implement annual program review at the forest level to track number and types of projects implemented along the river corridor. Include discussion in annual M&E report.	Annually	Annual	Moderate	High	SO				
12	What are the status and trend of Wild and Scenic River conditions? Also see Appendix F for Red River	Are the Outstandingly Remarkable Values being protected?	45	Implement annual program review at the forest level to track number and types of projects implemented along the river corridor. Include discussion in annual M&E report.	Annually	Annual	Moderate	Moderate	SO				
13	Are the scenery and recreation settings changing and why?	Acres of National Forest land that affect scenic quality objectives [36 CFR 219.27(c)(6), 36 CFR 219.27(d)(1)]	46	Treatment and location data entered in activity tracking system at time treatment completed. Summary report of project acres that affect the assigned SIO. M&E report.	Continuous	Annual	Low	Moderate	SO- Recreation Staff (Forest Landscape Architect)				



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13	Are the scenery and recreation settings changing and why?	Acres of National Forest land that affect established ROS objectives	47	Treatment and location data entered in activity tracking system at time treatment completed. Summary report of project acres that affect the assigned ROS objective. M&E report.	Continuous	Annual	Low	Moderate	SO- Recreation Staff (Forest Landscape Architect)				
14	Are heritage sites being protected?	Effectiveness of sites evaluated for the National Register of Historic Places? [36 CFR 219.24(a)(3)]	48	Evaluate 5 sites per year	Annually	Annual	Moderate	High	Forest and District Archeologist	\$15,000 per site			
14	Are heritage sites being protected?	Effectiveness of heritage protection measures effective? [36 CFR 219.24(a)(4)]	49	Sample field condition assessment of 50 sites eligible or listed in National Register. M&E Report	Annually	Annual	High	High	Forest and District Archeologist	\$250 per site			
15	Are watersheds maintained (and where necessary restored) to provide resilient and stable conditions to support the quality and quantity of water necessary to protect ecological functions and support intended beneficial uses?	Stream stability in reference watersheds compared to stability of streams in watersheds where projects are occurring	50	Conduct stream substrate sampling on a subset sample of projects once per year (September – October or following a major storm event) using procedures such as those described by Kappesser (2002). Evaluate project watersheds and compare with reference watershed data.	Continuous	Annual	Moderate	High	Forest Hydrologist				
15	Are watersheds maintained (and where necessary restored) to provide resilient and stable conditions to support the quality and quantity of water necessary to protect ecological functions and support intended beneficial uses?	Stream water temperatures in reference watersheds compared to watersheds where projects are occurring (maximums and minimums)	51	Install data loggers in all reference watershed streams and use data from them to compare with data from managed watersheds. Once a year, conduct statistical analysis to evaluate occurrence and significance of differences.	Continuous	Annual	Moderate	High	Forest Fisheries Biologist				
15	Are watersheds maintained (and where necessary restored) to provide resilient and stable conditions to support the quality and quantity of water necessary to protect ecological functions and support intended beneficial uses?	Condition and trend of chemical resilience of watersheds across the Forest as indicated by chemical parameters	52	Water quality sampling protocol	Periodic	Annual	Moderate	High	Forest Hydrologist				

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15	Are watersheds maintained (and where necessary restored) to provide resilient and stable conditions to support the quality and quantity of water necessary to protect ecological functions and support intended beneficial uses?	Are State BMPs and Forest Standards being implemented to protect and maintain soil and water resources? [36 CFR 219.27(a)(4), 36 CFR 219.12(k)(2)]	53	Field inspection of project sites following established monitoring protocol. Results reported annually in M&E Report.	Periodic or at random	Annual	Moderate	High	Forest hydrologist or soil scientist				
15	Are watersheds maintained (and where necessary restored) to provide resilient and stable conditions to support the quality and quantity of water necessary to protect ecological functions and support intended beneficial uses?	Is Standards (BMPs) Effective minimizing non-point source pollution?	54	Sample project activities related to BMPs for effectiveness of BMPs and standards. 1) Visual inspection of standards, 2) Measured effects of Aquatic biota inventories - Results reported annually in M&E Report.	Periodic or at random	Annual	Moderate	High	Forest hydrologist or soil scientist				
15	Are watersheds maintained (and where necessary restored) to provide resilient and stable conditions to support the quality and quantity of water necessary to protect ecological functions and support intended beneficial uses?	Effect of management activities on soil quality and productivity [36 CFR 219.12(k)(2), 36 CFR 219.27(a)(1)]	55	Sample projects for soil loss. Actual soil movement may sometimes be determined by techniques such as fabric dams. Results reported annually in M&E Report	Periodic or at random	Annual	Moderate	High	Forest hydrologist or soil scientist				
15	Are watersheds maintained (and where necessary restored) to provide resilient and stable conditions to support the quality and quantity of water necessary to protect ecological functions and support intended beneficial uses?	Are temporary roads being 80% re-vegetated within 3 years of contract or permit termination? [36 CFR 219.27(a)(11)]	56	Sample projects during program reviews to determine and document that standard are being met.	Annually	Annual	Moderate	Moderate	Forest Engineer				
15	Are watersheds maintained (and where necessary restored) to provide resilient and stable conditions to support the quality and quantity of water necessary to protect ecological functions and support intended beneficial uses?	Determine adequate instream flow to maintain resilient and stable conditions necessary to protect ecological functions and support intended beneficial uses	57	Select a reasonable sample of streams to determine the instream flows needed to protect stream processes, aquatic and riparian habitats and communities, and recreation and aesthetic values.	Periodic or at random	Annual	Moderate	High	Forest hydrologist				

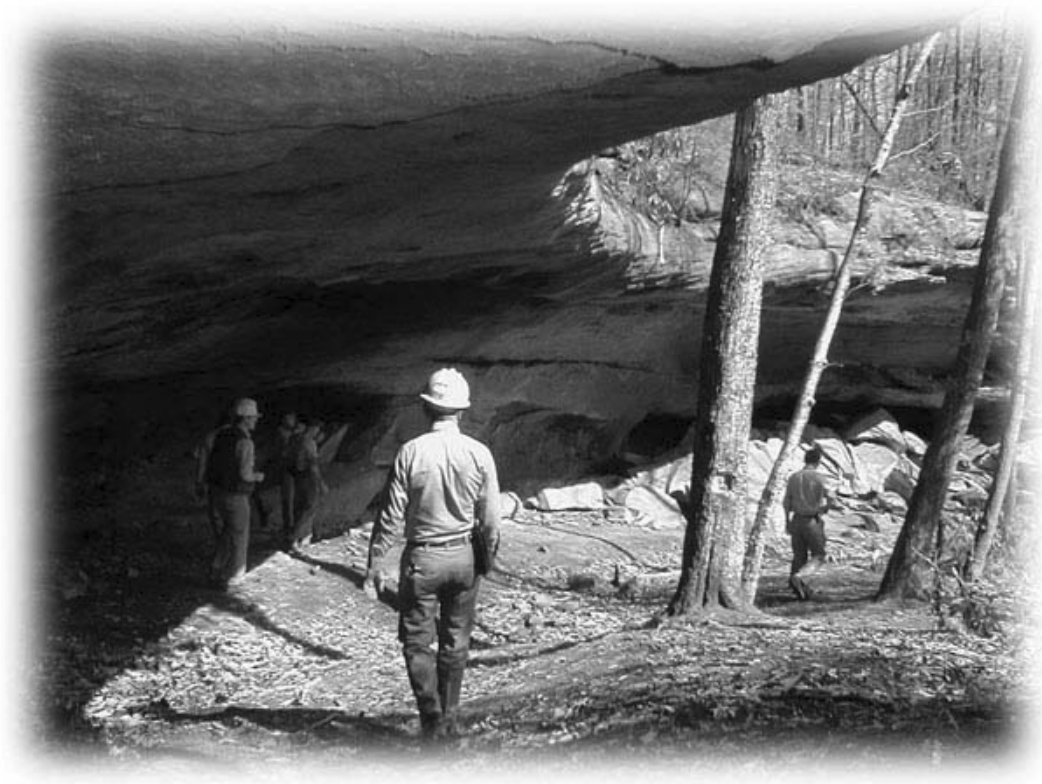
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16	What are the conditions and trends of riparian area, wetland and floodplain functions and values?	Are management strategies in riparian areas adhering to Forest Plan riparian guidelines?	58	Review of project documents and related EAs/EISs for compliance with BMPs and standards. Results reported annually in M&E Report.	Annually - 10%/year of decision notices	Annual	Low	Low	Forest hydrologist				
16	What are the conditions and trends of riparian area, wetland and floodplain functions and values?	Are riparian areas or corridors providing necessary shade and cover for aquatic habitats?	59	Stream surveys in project areas of shade and cover of aquatic habitats. Measurements taken according to established protocols. Results reported annually in M&E Report.	Continuous	Annual	Moderate	Moderate	Forest fisheries biologist				
16	What are the conditions and trends of riparian area, wetland and floodplain functions and values?	Are soils in riparian areas being maintained? Is there less than 10% ground disturbance	60	Sample projects during program reviews to determine and document that standard is being met. Results reported annually in M&E Report.	Annually	Annual	Moderate	Moderate	Forest soil scientist				
16	What are the conditions and trends of riparian area, wetland and floodplain functions and values?	Are best management practices being applied in riparian areas? [36 CFR 219.27(a)(4), 36 CFR 219.12(k)(2)]	61	Sample projects during program reviews to determine and document that standard are being met. Field monitoring, according to established protocols, of BMP application in riparian areas of project sites. Results reported annually in M&E Report.	Annually	Annual	Moderate	High	Forest hydrologist or soil scientist				
16	What are the conditions and trends of riparian area, wetland and floodplain functions and values?	Effects on riparian values, soil and water quality, and (e) stream bank stability [36 CFR 219.27(a)(4), 36 CFR 219.27(b)(6), 36 CFR 219.27(c)(6)]	62	Sample projects during program reviews to determine and document where riparian values soil and water impacts and stream bank stability is observed. Results reported annually in M&E Report.	Annually	Annual	Moderate	Moderate	Forest hydrologist or soil scientist				
16	What are the conditions and trends of riparian area, wetland and floodplain functions and values?	Wetland maintenance or mitigation during project planning and implementation	63	Review of project EAs/EISs, and Field inspections of project areas. Results reported annually in M&E Report.	Annually	Annual	Moderate	High	Forest hydrologist, biologist or soil scientist				

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17	How do actual outputs and services compare with projected?	Are forest products being produced within predicted ranges? [36 CFR 219.27 (c)(2)]	64	Track trends from annual accomplishments and compare with Forest Plan projections. ASQ will not exceed 1870 MCF over the 10-year period. Total program quantity will range from 2070 MCF to 2530 MCF. Want to also track products offered.	Annually	Annual	Moderate	High	Forest Products Staff				
17	How do actual outputs and services compare with projected?	Trends in demand for mineral resources in relationship to national forest mineral resource availability?	65	Track trends in minerals permits and compare with Forest Plan projections. Track private mineral projects and Federal Applications for Permit to Drill	Annually	Annual	Moderate	High	Forest Lands and Minerals Staff				
17	How do actual outputs and services compare with projected?	Surface occupancy and rights in relation to sub-surface rights. [36 CFR 219.22]	66	Interdisciplinary review of surface occupancy and minerals permits. Account for the projects in the preceding task having analysis work completed by interdisciplinary staff.	Annually	Annual	Moderate	Moderate	Forest Lands and Minerals Staff				
17	How do actual outputs and services compare with projected?	Access to explore and develop mineral resources of domestic compelling significance [36 CFR 219.22]	67	Interdisciplinary review of surface occupancy and minerals permits	Annually	Annual	Moderate	Moderate	Forest Lands and Minerals Staff				
17	How do actual outputs and services compare with projected?	Are roads being maintained, constructed or reconstructed to reduce sediment delivery to water bodies and to provide a transportation system that supplies safe and efficient access for forest users while protecting forest resources. [36 CFR 219.27 (a)(10)]	68	Interdisciplinary review of transportation system. Track miles of National Forest System Roads (NFSR) exist compared to miles maintained to their objective maintenance level. Miles of road improved. Miles of road decommissioned (classified and unclassified).	Annually	Annual	Moderate	High	Engineering Staff				

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17	How do actual outputs and services compare with projected?	Are constructed roads designed according to standards appropriate for the planned uses? [36 CFR 219.27 a (10), 36 CFR 219.27 b.(7)]	69	Interdisciplinary review of transportation system.	Annually	Annual	Moderate	High	Engineering Staff				
17	How do actual outputs and services compare with projected?	Are needed transportation corridors designated to established standards? [36 CFR 219.27 a (9)]	70	Interdisciplinary review of Roads Analysis Process accomplishments	Annually	Annual	Moderate	Moderate	Engineering Staff				
17	How do actual outputs and services compare with projected?	How do estimated and actual costs of plan implementation compare? [36 CFR 219.12(k) 3]	71	Compare trends in operating budgets to the estimated costs of implementing the Forest Plan	Annually	Annual	Moderate	High	Forest Planning Staff				
18	Are silvicultural requirements of the Forest Plan being met?	Are lands being adequately restocked within 5 years of regeneration treatments? [36 CFR 219.27(c)(3)]	72	Track reforestation reports 95% of stands adequately stocked after 5 years	Annually	Annual	Moderate	High	Forest Silviculturist				
18	Are silvicultural requirements of the Forest Plan being met?	Are lands not suited for timber production classified as such? [36 CFR 219.12(k) 5(ii)]	73	Review suitability using Spectrum	5 Years	5 Years	Moderate	High	Forest Planning Staff				
18	Are silvicultural requirements of the Forest Plan being met?	Have lands identified as not suitable for timber production become suitable? [36 CFR 219.14 (a)(d), 36 CFR 219.27(c)(1)]	74	Review suitability using Spectrum	5 Years	5 Years	Moderate	High	Forest Planning Staff				
18	Are silvicultural requirements of the Forest Plan being met?	Are harvest unit sizes within the allowable limits? [36 CFR 219.27(d)(2)]	75	Review harvest reports in STARS	Annually	Annual	Moderate	Moderate	Forest Products Staff				
18	Are silvicultural requirements of the Forest Plan being met?	Should maximum harvest unit size limits be continued? [36 CFR 219.12(k)(5)(iii)]	76	Interdisciplinary review	5 Years	5 Years	Moderate	Moderate	Forest Planning Staff				
18	Are silvicultural requirements of the Forest Plan being met?	Are silvicultural practices in compliance with Forest Plans? [36 CFR 219.27(c)]	77	Interdisciplinary review of practices in the field	Annually	Annual	Moderate	High	Forest Planning Staff				

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18	Are silvicultural requirements of the Forest Plan being met?	Are appropriate harvest methods used on the Forest? [36 CFR 219.27]	78	Interdisciplinary review of harvest units in the field	Annually	Annual	Moderate	High	Forest Planning Staff				
19	Are Forest Plan objectives and standards being applied and accomplishing their intended purpose?	Are project plans and environmental analyses for projects effectively and consistently implementing objectives and standards (including state BMPs)?	79	Interdisciplinary review. Sample project activities related to BMPs to for implementation of standards and BMPs. Review project documents and related EAs/EISs for compliance with standards and BMPs. Results reported annually in M&E Report.	Annually	Annual	Moderate	High	Forest Planning Staff				
19	Are Forest Plan objectives and standards being applied and accomplishing their intended purpose?	Is vegetation being managed according to requirements and making progress toward achievement of DFC for vegetation? [36 CFR 219.15, 36 CFR 219.27]	80	Interdisciplinary review. Sample vegetation management projects to compare vegetation conditions with the Plan DFC. Review project documents and related EAs/EISs for consistency with the Forest Plan. Results reported annually in M&E Report.	Annually	Annual	Moderate	High	Forest Planning Staff				
19	Are Forest Plan objectives and standards being applied and accomplishing their intended purpose?	Evaluate how diversity is affected by planned activities and whether expected results are being achieved. [36 CFR 219.26, 36 CFR 219.27 g, 36 CFR 219.27 (a)(5)]	81	Interdisciplinary review. Sample projects to observe effects on diversity. Review project documents and related EAs/EISs and BEs. Results reported annually in M&E Report.	Annually	Annual	Moderate	High	Forest Planning Staff with input from all disciplines				
19	Are Forest Plan objectives and standards being applied and accomplishing their intended purpose?	Determine whether standards, guidelines, and management requirements are being met and are effective in achieving expected results. [36 CFR 219.27 (a)(6)]	82	Interdisciplinary review. Sample projects to observe effectiveness of implemented standards. Results reported annually in M&E Report.	Annually	Annual	Moderate	High	Forest Planning Staff with input from all disciplines				
19	Are Forest Plan objectives and standards being applied and accomplishing their intended purpose?	Determine when changes in GPRA, policies, or other direction would have significant effects on Forest Plans. [36 CFR 219.10(g)]	83	Interdisciplinary review of Forest Plan in relation to agency policy and direction.	Annually	Annual	Moderate	Moderate	Forest Planning Staff				

MQ #	Monitoring Question	Element	Task #	Method of Collection	Duration/ Frequency	Reporting Interval	Needed Precision	Needed Reliability	Responsibility	Cost	Goal #	Obj. #	Stand. #
19	Are Forest Plan objectives and standards being applied and accomplishing their intended purpose?	Determine if planning information or physical conditions have changed. [36 CFR 219.10(g)]	84	Interdisciplinary review of Forest Plan for needed changes as new information becomes available and/or significant changes in conditions are observed.	As needed	Annual	Moderate	Moderate	Forest Planning Staff with input from all disciplines				
19	Are Forest Plan objectives and standards being applied and accomplishing their intended purpose?	Identify changes in ability of the planning area to supply goods and services in response to society's demands. [36 CFR 219.10(g), 36 CFR 219.21(a)(2)]	85	Interdisciplinary review of Forest Plan for needed changes as new information becomes available and/or significant changes in conditions are observed.	As needed	Annual	Moderate	Moderate	Forest Planning Staff				
19	Are Forest Plan objectives and standards being applied and accomplishing their intended purpose?	Determine effects on NF management from activities on nearby land. [36 CFR 219.7(f)]	86	Interdisciplinary review of Forest Plan for needed changes as changed conditions on nearby lands are observed.	As needed	Annual	Moderate	Moderate	Forest Planning Staff				
19	Are Forest Plan objectives and standards being applied and accomplishing their intended purpose?	During monitoring determine research needs. [36 CFR 219.28]	87	Interdisciplinary review of Forest Plan for information needs requiring scientific investigation.	Annually	Annual	Moderate	Moderate	Forest Planning Staff with input from all disciplines				



Forest Service personnel inspect archeological site in a rockshelter on the Stanton Ranger District.