

MONITORING AND EVALUATION

CHAPTER IV

MONITORING AND EVALUATION

The purpose of monitoring and evaluating implementation of the Forest Plan is to determine the progress toward achieving the goals, objectives, and management requirements of the Forest Plan.

Monitoring will provide the information necessary to determine if:

- management area direction is applied as directed;
- management requirements are being followed;
- the Forest is achieving the objectives of the Plan;
- the application of management area prescriptions are responding to public issues and management concerns;
- the effects of implementing the Plan are occurring as predicted;
- the costs of implementing the Plan are as predicted;
- management practices on adjacent or intermingled non-National Forest lands are affecting Forest Plan goals and objectives; and
- National Forest management is affecting land resources, and communities adjacent to or near the Forest.

An annual monitoring action program will be prepared as part of the total Pike and San Isabel National Forests annual program of work. This annual monitoring program will include the details of the amount and location of monitoring to be accomplished based on the approved program of work and funds available for monitoring. Monitoring responsibility, specific locations, intensity of sampling, person days required, and costs will be identified in the annual monitoring program.

The results of the site-specific monitoring program will be evaluated and documented in the annual review. The significance of the results of the monitoring program will be analyzed by the Forest Interdisciplinary Team and reviewed for action by the Management Team.

Based on the analysis, any need for further action is recommended to the Forest Supervisor. The recommendations can include:

- no action needed, monitoring indicates goals, objectives, and management requirements are achieved;
- recommended actions referred to the appropriate line officer for improvement of application of management area direction;
- modification of management requirements as a Plan amendment;
- modification of the allocation of a Management Area Prescription as a Plan amendment;
- revision of the projected schedule of outputs; or
- revision of the Plan.

The documented file of the Forest Supervisor's decisions resulting from monitoring and evaluation is maintained for future use in amending or revising the Forest Plan.

The Forest Plan's monitoring activities appear in Table IV-1. As part of the annual monitoring action program, activities from Table IV-1 will be included as appropriate.

TABLE IV-1
MONITORING REQUIREMENTS

ACTIONS, EFFECTS OR RESOURCES TO BE MONITORED	MONITORING TECHNIQUES OR DATA SOURCES	PRECISION RELIABILITY	MEASUREMENT FREQUENCY	REPORTING PERIOD	VARIABILITY WHICH WOULD INITIATE EVALUATION
RECREATION					
Developed Sites, Actual Use	Recreation Information Management (RIM) System. RIM Use Source Documents	Moderate/ Moderate	Various. Continuing in accordance with random sampling procedures	Annual	Reported use varies by more than 20% of planned use
Developed Sites, Demand	Estimated occupancy rate as an indicator of demand for sites. Situation Reports. Public comment. Review development activities occurring on private and other lands	Low/Moderate	Annual. Scope and intensity will be established in the annual action program	Annual	Sites are under utilized or significant over-crowding, resource damage, or user conflicts are occurring at sites based on evaluation by the I.D. and Management Teams
Developed Sites; PAOT Capacity and number of sites	Actual count RIM Source Documents Management Attainment Report.	High/High	Annual	Annual'	Capacity and number of sites are not within the range of planning objectives
Developed Sites; PAOT Managed At Full Or Reduced Service Levels	Actual count. RIM Source Documents; Management Attainment Report	High/High	Quarterly	Annual	1) Annual assigned targets are not met. 2) Fee sites are not operating at full service level 3) Fee sites are not at RIM maintenance class 1.
Downhill Skiing; Use Capacity and Demand	RIM System estimates; actual counts, and lift ticket sales. Each site, RIM Source Documents Public comments. Situation Reports. Studies by others	Use. High/High Demand. Low/ Moderate	Annual	Annual	Sites are under utilized or significant over-crowding, resource damage, accidents or user conflicts are occurring at sites based on the evaluations of the I.D. and Management Teams
Dispersed, Actual Use	RIM Source Documents. RIM System estimates; statistical samples; trails & road traffic counts, trail registers estimates.	Low/Moderate	Continuing and in accordance with approved sampling procedures	Annual	Reported use varies by more than 20% of planned use

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<u>RECREATION</u> continued.					
Dispersed; Miles of Trails Construction or Reconstruction	Project analysis	High/High	Annual	Annual	Average annual mileage varies by more than 10% of planned mileage
Dispersed Recreation Use Effects of Activities on people, other resources and facilities, including roads & trails Effects of other resource activities, recreation use and facilities	Selected Management Area or Facility analysis utilizing various techniques for assessing trail, campsite, road and resource condi- tions Public comments Situation reports Studies by others.	Low/Moderate	Annual Scope and intensity will be established in the annual action program		Recreation and other resource activities are not compatible with the ROS classifications associ- ated with the Management Area Prescription Significant resource damages and user conflicts are occurring Recreation use exceeds the range of capacity levels applicable to Management Areas by more than 20%. Condition evaluations will be based on the conclusions of the I D and Management Teams
<u>WILDERNESS</u>					
Average Annual Use	RIM System estimates, trail counts, visitor registrations, visitor contacts RIM Source Documents.	Low/Moderate	Continuing and in accordance with approved sampling procedures	Annual	Estimated use exceeds 10% of planned use.
Effects of Use and activities on the wilderness resource	Selected Wilderness Management Area analysis utilizing various tech- niques for assessing trail, campsite, and resource con- ditions Public comments Situation reports Studies by others	Low/Moderate	Scope and intensity will be established in the annual action program	Annual	Resource damages and user conflicts are occurring Wilderness use exceeds the range of capacity levels applicable to the Management Area by more than 10%. Con- dition evaluations will be based on the conclusions of the I.D and Management Teams
<u>CULTURAL RESOURCES</u>					
Acres Surveyed/ Sites Evaluated	Actual acres by class of survey Annual report Project work records.	High/High	Annual	Annual	Substantial non-compliance with Forest Management Requirements as documented by Forest cultural resource specialist

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<u>CULTURAL RESOURCES</u> continued:					
Sites Protected, Interpreted	Periodic field inspec- tions Project work records.	High/High	Annual	Annual	Substantial non-compliance with Forest Management Requirements as documented by Forest cultural resource specialist
<u>VISUAL RESOURCE</u>					
Retention and Partial Retention VQO	Selected Management Area or project area analysis conducted by Forest Landscape Architect or other qualified persons	Low/Moderate	Annual Scope and Intensity will be established in the annual action program	Annual	Visual Quality Objectives applicable to Management Areas are exceeded
Modification and Maximum Modification	Selected Management Area or project area analysis conducted by Forest Landscape Architect or other qualified persons.	Low/Moderate	Annual. Scope and Intensity will be established in the annual action program	Annual	Visual Quality Objectives applicable to Management Areas are exceeded
<u>FISH AND WILDLIFE</u>					
Accomplishment of Joint Forest Service/ State Comprehensive Wildlife Management Plan Objectives	Project administration	High/High	Annual	Annual	+ 10% change from assigned targets or joint planned objectives which are financed
Wildlife Habitat Diversity	Resource Information System (RIS) *	Low/Moderate	5 Years	5 Years or (Prior to Plan update)	Diversity index does not show upward trend.
Acres of Habitat Modified	Project work records. Actual acres treated or modified.	High/High	Annual	Annual	+ 20% change from estimated acres to be treated
Acres of Habitat Improved	Project work records Actual acres improved	High/High	Annual	Annual	+ 20% change from estimated acres to be treated for habitat improvement

*Resource Information System (RIS) is a resource data storage and retrieval system The data base contains resource information on locations, sites and activities for 35,311 sites on the Forest

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<u>FISH AND WILDLIFE</u> continued:					
Maintain Riparian Habitat	Habitat analysis; Project work records.	Moderate/ Moderate	Annual	2 Years	Riparian habitat is not improving
Trend of Management Indicator Species Habitats and Popu- lations	Habitat capability assessments, popula- tion estimates by State Wildlife Agencies, Resource Information System, Profes- sional judgment by Forest Service biologists and activity reviews	Moderate	5 Years	5 Years	+ 25% change in species habitat capability or population size.
<u>RANGE</u>					
Permitted AUM	Annual Range Report.	High/High	Annual	Annual	Permitted AUMs do not meet projected planned outputs by + 10% for 10 year period
Range Condition	Range analysis and allotment inspections.	Moderate/ Moderate	20% of Allotments Annually	5 Years	Range condition not fair or higher or improving in accordance with allotment management plans
<u>TIMBER</u>					
Sales	RIS site and activity records	High/High	Quarterly	Annual	+ 10% from assigned sales targets in timber sales offered
Assure restocking of treated areas within 5 years (7 years for lodgepole pine) fol- lowing final harvest, except when a longer regeneration period is allowed by the management prescription	RIS site and activity records	High/High	100% Sample	5 Year Reports	+10% from assigned reforestation targets Treated acres not restocked within required time periods
Assure that timber stand treatments will not favor an increase in forest pests (insects, diseases, etc)	Stand exams, ground and aerial pest surveys, post sale reviews, prescriptions.	Moderate/ Moderate	20% Sample	Annual	Destructive insect and disease organisms increase following management activities

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<u>TIMBER</u> continued-					
Assure that treatment objectives (area in acres) by forest type and stand size class are being met during Plan implementation	RIS site and activity records	High/High	100% Summary	Annual	More than 20% deviation from forest-wide area targets by type and stand size
Assure that cutting methods prescribed in the Management Area Prescriptions are being utilized for project implementation	RIS site and activity records	Moderate/Moderate	25% Sample Annually	Annual	More than 20% deviation from Management Area Prescriptions (Tree Stand Management Activities) on a forest-wide basis
Assure that timber sold does not exceed the allowable sale quantity established for the 10-Year period	10-Year and 5-Year Sale Programs, Cut and Sold Reports; RIS site and activity records	High/High	100% Sample	Annual	Allowable quantity exceeded
a) Chargeable timber offered	Accomplishment Reports	High/High	100% Sample	Annual	Allowable quantity exceeded
b) Nonchargeable timber offered	Accomplishment Reports	High/High	100% Sample	Annual	Monitor for effects and information updates
<u>WATER</u>					
Water Quality	Establish baseline stations Establish short term data stations Utilize STORET* Data System Forest-wide Monitoring Plan approved 1981	High/High	Annually, during the runoff period	Current as data is collected	Not meet State water quality standards and project plan objectives Sediment yield not within threshold limits
Water Quantity	Baseline stations and short term stations HYSSED** System Project Analysis	High/High	Annually during the runoff period	Current or annual	Not meet Forest Plan goals and project objectives

*STORET is a national water quality data storage and retrieval system established and operated by the U.S. Environmental Protection Agency

**HYSSED is a water yield and sediment yield model developed by the U.S. Department of Agriculture, Forest Service, Rocky Mountain Region.

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<u>MINERALS:</u>					
Minerals Management, (Locatable, leasable, common variety)	Review of operating plans, project reports, and on site inspections Management Attainment Report	High/High	Currently or Quarterly	Annual	Lack of compliance with applicable mining laws and regulations and surface occupancy standards for oil and gas exploration and development, and other mineral activity as determined by on site inspection.
<u>HUMAN AND COMMUNITY DEVELOPMENT:</u>					
Human Resource Manpower Programs	Enrollee counts. Management Attainment Report.	High/High	Quarterly	Annual	+ 20% from assigned targets.
Community, Stability and Productive Harmony	Citizen involvement; issues and concerns analysis.	Moderate/ Moderate	Annual	Annual and 5 Year (Prior to Plan update)	Negative trends
<u>SOILS.</u>					
Soil loss above natural erosion levels	Project analysis. Modified soil loss equation	Low/Low	Current	Routinely and annually	Soil loss exceeds soil loss tolerance level by more than 10% capability area for project
Soil and Water Quality Improvements	Acres treated Manage- ment Attainment Report	High/High	Quarterly	Annual	+ 10% from assigned targets.
Accelerated Soil Loss Forest-wide	Project Analysis Universal Soil Loss Equation*	Low/Low	Annual	Annual	Average soil loss exceeds 2 tons per acre for Forest, 4 ton per acre for National Grasslands
<u>FACILITIES</u>					
Roads - Construction and Reconstruction	Project analysis.	High/High	Annual	Annual	+ 10% from assigned targets Does not meet resource project needs
Landline Location	Project analysis	High/High	Annual	Annual	+ 10% from assigned targets Does not meet resource project needs. Protection from encroachment

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Transportation Management	Road maintenance plan and accomplishment report Travel manage- ment plan and accomplish- ment report	Moderate/ Moderate	Periodic	Annual	Road management and maintenance classes and conditions do not meet Forest Plan and project needs
Fuel Treatment	Project analysis. Acres treated Management Attainment Report	Moderate/ Moderate	Annual	Annual	Assigned targets in acres treated and Management Area standards in fuel loadings (Tons/Acre) vary more than ± 20%
Air Quality	Project analysis of selected projects with indicated potential for pollution.	Low/Low	One project per year	Annual	Exceeds applicable Federal and State Ambient Air Quality Standards.
<u>ECONOMICS</u>					
Capital Investments	Forest Reports	High/High	Annual	Annual	Not meet Forest Plan objectives and assigned targets by ± 10%
Returns to U S. Treasury	Forest Reports	High/High	Current	Annual	No targets assigned Monitor for effect
Receipt Shares to Counties	Forest Reports.	High/High	Annual	Annual	No targets assigned Monitor for effect
Efficiency Analysis	Cost and benefit values updated as better information becomes available PNV analysis completed.	High/High	Annual	Annual	No targets assigned Monitor for effects and information updates Use FORPLAN, MTVEST, IMPLAN, etc
Impact	Outputs confirmed and Impact Analysis com- pleted after Management Attainment Reporting	High/High	Annual	Annual	No targets assigned Monitor for effects and information updates. Use IMPLAN.
Unit Costs for Planning Activities	Forest Reports	High/High	Annual	Annual	More than 20% deviation from estimated costs on a forest-wide basis.

*Universal Soil Loss Equation is a soil erodibility nomograph for soil loss determinations. (See Glossary of Terms for a definition of factors used.)