FY 1998

Monitoring and Evaluation Report

San Juan - Rio Grande National Forests

April 1999

Certification

This report is presented in two sections. The Rio Grande and San Juan National Forests have separate Forest Plans with different monitoring requirements.

The Rio Grande National Forest's Land and Resource Management Plan was approved on November 7, 1996. It has been amended twice, and two more amendments (timber-suitability error corrections and Botanical Special Interest Area boundary adjustment) are in progress. Southern Colorado is experiencing significant growth and change. We anticipate the Forest Plan changing over time, as well.

The Forest Interdisciplinary Team's evaluation of the 1998 monitoring results identified five additional potential amendments:

- updating Desired Conditions for the ski area (page 8);
- changing Monitoring Requirements for fish and birds (pages 17 and 18);
- correcting mapping errors in the boundary of the Fox Mountain Unroaded Area (page 22);
- changing Management Prescriptions for portions of the Houselog area (page 24); and
- changing the wording of some silvicultural Guidelines (page 27).

The portion of the report for the San Juan National Forest is primarily an evaluation of needs to change the current Forest Plan. The Forest Interdisciplinary Team identified needed changes in almost all resource areas. The Plan was approved on September 29, 1983. It has been amended 18 times and is still workable, but needs to be revised.

I have reviewed the annual Monitoring and Evaluation Report for the San Juan - Rio Grande National Forests for fiscal year 1998. I believe that the monitoring and evaluation requirements of the Forest Plans have been met and that the decisions in the Forest Plans are still valid, but the San Juan's Plan needs to be revised. A Notice of Intent to revise the Land and Resource Management Plan for the San Juan National Forest will be published in the *Federal Register* by September 30, 1999. I have noted and considered the recommendations for the Rio Grande National Forest and will implement those that I decide are appropriate, after further analysis and required public notification and involvement.

/s/ Stephen F. Pedigo — *May 5, 1999*

STEPHEN F. PEDIGO — Date
Acting Forest Supervisor

Contents

❖

Cover: Boreal owl 25-day-old nestlings on the Grand Mesa, Colorado. The boreal owl is an uncommon but widely distributed resident of spruce-fir forests throughout Colorado. It is a Region 2 Sensitive species. Photo by Chris Schultz, wildlife biologist, San Juan - Rio Grande NFs.

❖

This report was edited and formatted by Tom Harris, writer-editor, San Juan - Rio Grande NFs.

❖

Introduction

This report is presented in two sections. The first addresses the monitoring done for the Rio Grande National Forest portion of the San Juan - Rio Grande National Forests. The second section addresses the monitoring done for the San Juan portion. The formats differ for each side of the Forests, but the information is presented as one report.

Monitoring: Rio Grande National Forest

In November 1996, the Revised Land and Resource Management Plan (Forest Plan) for the Rio Grande National Forest was approved. The Forest Plan establishes the management direction for all future activities, to ensure that an interdisciplinary approach is used to achieve the Desired Conditions described for all areas of the Forest.

This Monitoring and Evaluation Report is based on the Monitoring Plan for the Forest, and is described in Chapter 5 of the Forest Plan for the Rio Grande National Forest (RGNF). This report is not a list of outputs; rather, it describes conditions of the various resources after Forest Plan implementation. The report is key to the concept of adaptive management (the ability to change as new information or technology is developed) and is the feedback mechanism for improved resource management. The information presented in this report will be used to determine if an amendment or revision of the Forest Plan is needed.

The RGNF Interdisciplinary Planning Team developed the criteria for the Monitoring and Evaluation program. These criteria are based on national policies, Regional monitoring-emphasis items, interdisciplinary-team concepts, and legal and other policy requirements. The criteria include:

- The Goals, Objectives, and Desired Conditions identified in the Forest Plan.
- The Forest Management Direction.
- Land suitability.
- Management Area Prescriptions, as well as the Forestwide and Management Area-specific Standards and Guidelines.
- The Monitoring Plan.
- Congressional recommendations.

The Monitoring and Evaluation program asks the fundamental questions, "How are things working?" and "What needs to be changed?"

The purpose of the monitoring program is to establish a basis for periodic determination and evaluation of the effects of management practices (36 CFR 219.11(d)). **Desired Conditions** (Forest Plan, Chapter 1) describe the conditions that the Plan is designed to achieve on the entire Forest.

Forestwide Objectives (Forest Plan, Chapter 2) are more specific statements, describing results or conditions the Forest Service (FS) intends to achieve on the ground. Objectives are tied closely to Desired Conditions.

Monitoring Objectives (Forest Plan, Chapter 5) are statements developed from the Forestwide Objectives, and show what will be monitored and evaluated as part of the monitoring program. This linkage is important in meeting the intent of 36 CFR 219.12(k), which says that "...implementation shall be monitored on a sample basis to determine how well objectives have been met..."

The annual monitoring work is described in the Annual Monitoring Operation Plan (AMOP). The AMOP details the monitoring work expected to be completed in the upcoming year. The AMOP is developed by Forest resource specialists who are responsible for monitoring, and is reviewed and approved by the Forest Supervisor. The AMOP describes in detail the reasons, methods, locations, responsible persons, and estimated costs.

Three types of monitoring are described for Forest management:

- **Implementation Monitoring.** This includes the periodic monitoring of project activities to determine if they have been designed and carried out in compliance with Forest Plan direction and management requirements.
- **Effectiveness Monitoring.** This level of monitoring is used to determine if management activities are effective in achieving the Desired Future Condition described for each of the various management areas.
- **Validation Monitoring.** This level of monitoring is used to determine whether the initial data, assumptions, and coefficients used in the development of the Forest Plan are correct, or if there is a better way to meet Goals and Objectives and Desired Future Conditions.

Because the Forest Plan has been in implementation for such a short time, this 1998 report focuses primarily on implementation and effectiveness. As trends develop and conclusions are validated, the third level of monitoring will be addressed.

Planning Activities

There have been two amendments of the Revised Forest Plan, and two more are expected when the NEPA analysis supporting them is completed. Those projects are underway. Several other potential amendments are addressed as part of the conclusions of this report.

Previous Amendments

Amendment #1: This amendment was approved by the Forest Supervisor on March 3, 1998. It temporarily suspends Backcountry Management Area Prescription Standard Number 1 on the 62 acres addressed in the Twister Blowdown Environmental Assessment. The amendment will be rescinded upon completion of the salvage work in that area. The rationale for the amendment is described in the Decision Notice for 3.3 Backcountry, included in the Twister Blowdown EA.

Amendment #2: This amendment was approved by the Forest Supervisor on August 3, 1998. It adds Wilderness management Goals to the Revised RGNF Land and Resource Management Plan Goals, changes Management Area definitions and locations, adds Wilderness management Standards and Guidelines, defines Wilderness Thresholds and Management Actions within Wilderness when Thresholds are exceeded, adds Wilderness monitoring requirements, and adds a Wilderness Management Area map to the Land and Resource Management Plan.

Current Amendments

The amendments under analysis include:

- **The correction of an error regarding timber suitability**. The error occurred between the publication of the Draft and Final Environmental Impact Statements. Correction of the error will restore acres to the Tentatively Suitable timber land base. There will be no changes in the Allowable Sale Quantity as a result of this Forest Plan amendment; however, one Forest Plan Standard may need to be changed. Analysis is underway.

- **Adjustment of a Botanical Special Interest Area boundary**. The purpose of this Special Interest Area is to protect a Sensitive plant (Ripley milkvetch). This plant generally grows in relatively open ponderosa pine / Arizona fescue communities (Douglas-fir may also be present and is somewhat codominant with ponderosa pine) where canopy coverage by all trees is less than 25% and where the elevation is about 9,200' or lower, in the Hicks Canyon area. Analysis to support the amendment is underway as part of the November Analysis Area Environmental Assessment.

Recommendations have been made to investigate the need for additional Forest Plan amendments, but the analysis to support them has not been started. There have been no adjustments in the acreage of any Management Areas as a result of Forest Plan amendments.

Monitoring Requirements

This section briefly synopsizes the level of monitoring identified for each resource component of the Monitoring Plan. A more detailed description is included in the Forest Plan (Chapter V, pp. V-4 through V-16). Forest Monitoring efforts are focused on meeting these requirements; the amount of monitoring actually done for each element, however, is a function of the funding available.

Biodiversity

Maintaining the habitat necessary to support viable populations is required by 36 CFR 219.27 and 36 CFR 219.19(6). To determine if the Forest Plan is meeting this objective, Forest specialists will monitor those species and/or habitats about which there are some questions as to their potential viability. These are species found on the Threatened and Endangered list, the Regional Sensitive Species list, and the Colorado Natural Heritage Program's list of Species Of Special Concern and Significant Plant Communities.

Monitoring will occur at two different scales. The "fine-filter" scale will focus on particular plant and wildlife species that generally occupy distinct habitats which cannot be accurately monitored at the landscape level. The rest of the fine-filter work is specific to the known location(s) of the particular plant or animal. The intent of the fine-filter work is to track the species' population trends over time.

The "coarse-filter" work focuses on tracking the changes in gross habitat conditions (e.g., cover type, structural changes), and if there have been any changes in the condition of the site(s). Providing for and maintaining diversity of plant and animal communities are required by 36 CFR 219.27. To ensure that the Forest is meeting these objectives, four attributes have been selected for monitoring, because they capture the key components of vegetative diversity. Two of them involve tracking changes in the amount, quantity, and pattern of the vegetation that may appear over the life of the Plan. The third is a validation of the reference-work and landscape-scale tools. The final attribute is a progress report on the gathering of data for the Forest's old-growth inventory/reconnaissance.

Air Quality

Maintaining air quality at a level that is adequate for protection and use of National Forest System resources is required by 36 CFR 219.27 (a)(12). To accomplish air quality monitoring, a number of techniques will be employed. For instance, visibility data are available from the National Park Service, which monitors visibility at the Great Sand Dunes National Monument. Synoptic surveys in all four Wilderness Areas have identified the lakes most sensitive to changes in acidity, and they have been selected for long-term trend monitoring. Regional protocols and the Forest air-quality-monitoring plan stipulate that these lakes will be monitored three times per summer.

Timber

Restocking of final-harvest areas is required by 36 CFR 219.12(k). Monitoring will consist of surveys conducted in the first, third, and fifth year after final harvest. First-year surveys are on-site inspections, while third- and fifth-year surveys are statistically valid plot inventory exams.

36 CFR 219.12(k) requires that all Forest lands be examined at least once every ten years, to determine if Unsuitable lands have become Suitable, or vice versa. Monitoring will also confirm that lands identified as Suitable do, in fact, meet suitability criteria.

36 CFR 219.12(k)(5)(iv) requires the Forest to monitor levels of destructive insects and disease organisms following management activities. The monitoring of created openings is tied to various legal requirements, including 36 CFR 219.12(k)(5)(iii), and 36 CFR 219.27(d)(2).

Fire and Fuels Management

"Serious or long-lasting hazard" potential will be reported based on a determination of "relative resource values." Hazard potential from wildfire will be determined through ocular (eyeball) estimates, fuel transects, on-site inspections, and/or surveys.

In addition, the Fire program is routinely monitored through the National Fire Management Analysis System. This economic analysis program addresses the "relative resource value" determination through a complex cost/benefit evaluation of the Forest's fire suppression program.

Range

Monitoring of Suitable rangelands for condition and trend will be reported based on the information obtained from the Rocky Mountain Region's *Rangeland and Training Guide* (RAMTG) inventory process. The information is expected to yield baseline data to determine Desired Conditions of rangelands.

Monitoring of range suitability will be reported based on determinations made during the development of environmental assessments (EAs) and allotment management plans (AMPs) for each allotment.

Range utilization will be reported based on the results of routine field analysis.

Noxious Weeds

Monitoring of noxious weeds (where and to what extent they are present) will be reported based on the evaluation of control methods on infested areas on the Forest.

Watersheds, Including Soils, Water, and Riparian and Aquatic Ecosystems

Watershed health is a primary focus of the Forest Service, according to Chief Mike Dombeck. Accordingly, particular emphasis will be placed on this monitoring element.

Water-resource monitoring will be reported based on an evaluation of protection of streams (including stream banks, shorelines, and wetlands), as well as minimization of erosion and flood hazards.

Watershed-disturbance monitoring is expected to identify disturbances from past, present, and proposed activities; relate severity of disturbances to an equivalent roaded area; compare total disturbance to a Concern Level, to measure relative risk; and vary the Concern Level, based on existing information and experienced field people.

Monitoring and evaluation of stream health, water quality, and riparian conditions occur as Level III watershed assessments are completed on at least one stream and riparian area per Analysis Area for each land-disturbing EA.

Monitoring of streams within watersheds that have been identified as "at risk" will be reported based on Level II watershed assessments.

Monitoring of the six streams identified as damaged in the Monitoring Plan, to evaluate improvement over time, will be reported based on long-term assessments (two streams will be evaluated each year).

The protection of soil productivity will be monitored based on the requirements of 36 CFR 219.12(k)(2).

The Forest will use several tools for soil monitoring, including the collection and analysis of core soil samples, erosion modeling, ocular estimates, transects, investigations, and professional judgement. Soil health assessments will be made to determine whether long-term soil productivity is maintained or improved. These techniques will be employed on ground disturbing projects where high soil erosion, mass-movement

hazards or other soils concerns exist.

Minerals

Monitoring will be reported based on a verification process to determine if the conditions in the Forest Plan are still valid, and whether oil and gas operations could be allowed somewhere on a proposed lease tract. Monitoring of oil and gas will occur if such activities are developed.

Monitoring of locatable minerals will be reported based on the inspection and enforcement of operation plans to ensure compliance with the Forest Plan.

Unroaded Areas

Monitoring will be reported based on a representative assessment of Backcountry Areas. This will include the assessment of motorized- and nonmotorized-recreation trail use, levels and type of use, and recreation settings. The assessment will also address conflicts, identification of areas of concentrated use, and measurement of other resource activities.

Wild and Scenic Rivers

Monitoring will be reported based on the assessment of any resource management activities that occur within the river corridor.

Wilderness

Monitoring will be reported based on the evaluation of Wilderness Implementation Schedules, recreation uses, needs assessments, capacities, and guidelines.

Special Interest Areas

Monitoring will be reported based on on-site inspections of designated Special Interest Areas every five years.

Research Natural Areas

Monitoring will be reported based on on-site inspections every five years.

Heritage Resources

Monitoring will be reported based on the evaluation of protection measures for resources discovered during project evaluations.

Consultation with American Indian nations will be reported concerning areas of cultural importance to the various tribes.

Developed Recreation

Monitoring will be reported based on the routine inspection and maintenance report for each facility.

Visitor expectations will be monitored and reported based on customer surveys, evaluation of campground occupancy rates, the evaluation of standards, and campground hazard inspections.

Scenic Resources

Monitoring will be reported based on a determination of disturbance, using photographs, on-site inspections, and aerial photographs.

General Infrastructure

Monitoring will be reported based on the results of routine inspections of all facilities, including dams, facilities, drinking water, road bridges, trail bridges, and Forest Development Roads.

Travel Management

The Forest will monitor and evaluate the Travel Management Plan for compliance with the Forest Plan, to ensure the general infrastructure is meeting the needs of Forest users for access and multiple-use management.

Road-Construction Closures

Monitoring of road closures will be reported based on routine field reports.

Health and Safety

This monitoring objective is focused on meeting the intent of the National Health and Safety Codes and Occupational Safety and Health Administration guidelines.

Research and Information Needs

This information will be reported based on the results of all resource-monitoring activities.

Rio Grande National Forest
Monitoring and Evaluation
Fiscal Year 1998

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
Air Quality				
M & E visibility, lake chemistry, and terrestrial systems. 36 CFR 219.27 (a) (12).	(1) Photographic documentation of visibility. Coordinate with NPS. (L. Dobson.)	Great Sand Dunes National Monument.	Visibility and particulate monitoring was completed, but the NPS did not analyze the data since no major pollution sources that could impact air quality were proposed.	No changes in the Forest Plan needed.
	(2) Chemistry of most sensitive lakes. (K. Garcia, J. Fairchild, S. Hall, L. Dobson.)	Three lakes in the Weminuche WA, 2 in the S. San Juan WA, 2 in the La Garita WA, and 2 in the Sangre de Cristo WA.	Lake chemistry was evaluated. Data have not yet been received from the lab for analysis.	No changes in the Forest Plan needed.
	(3) Health of terrestrial systems such as lichen communities. (L. Stewart.)	Three sites from the baseline survey will be reassessed by measuring concentration of chemical elements to begin measuring trends.	Funding allowed only elemental analysis of one site, Wolf Creek Pass.	No changes in the Forest Plan needed.
M&E Burn Plan. 36 CFR 219.27 (a).	Visual verification of smoke dispersal. (L. Floyd, L. Dobson.)	North Park.	Prescribed burning was accomplished with good smoke dispersal. Stable atmospheric conditions existed throughout the burning period. No complaints were received from the public.	No changes in the Forest Plan needed.

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
Assess air resources relative to (a) Forestwide Goals, Objectives, S&Gs; (b) Management-Area Prescription Objectives, DCs, and S&Gs; (c) Management-Area Prescription allocations and monitoring methods (36 CFR 219.12 (k).	From monitoring results, conclude whether Standards and Guidelines and regulations are being followed, and if Desired Conditions are being met. (L. Dobson.)	As a result of monitoring all the above sites.	Forest management activities are following Standards and Guidelines. Desired Conditions are being achieved. All lab analysis is not available yet for a complete assessment.	No changes in the Forest Plan needed.
Aquatic Resources				
M&E Watershed Disturbances. 36 CFR 219.27. Level I watershed assessment to measure total and connected watershed disturbance and compare to concern levels.	Measure acres of disturbance in each 6th/7th level watershed. Use runoff curve numbers to equate all disturbances to an equivalent roaded area. Assess risk to watershed health from increased runoff. (Hydrologist: L. Dobson.)	Timber Sales: Twister, Elrosa, November, Lower Conejos. Range Allotments: Trout, Decker, Cumbres.	Surface disturbances for watersheds within these analysis areas are below concern levels, with a few exceptions. A small watershed in the Rio de los Pinos drainage is a watershed of concern, and harvest activities were avoided in it. Hicks Canyon, within the November Timber Sale, also has a high percentage of disturbance within the watershed area, but is an ephemeral channel with no signs of excessive runoff.	It appears that concern levels for total watershed disturbance have been set conservatively at a safe level to ensure adequate watershed health. No changes are needed.
M&E Stream and Riparian health. 36 CFR 219.27a. Level III stream assessment on one stream per 6th level watershed for each EA analysis area.	By comparing to a like reference stream, assess water quality, channel condition and riparian function to measure amount, if any, of impairment. (Hydrologist: L. Dobson.)	Decker Cr., Park Cr., Pass Cr., Beaver Cr., Fisher Cr., California Gul., Lime Cr., Crooked Cr., Big Spr. Cr., Medano Cr., Race Cr., Conejos R., Sheep Cr., Fourmile Cr., Dorsey Cr., San Luis Cr., Raspberry Cr., Brook Cr.	Stream health was adequate to robust for all except the following. Small portions of Pass and Park Creek have been impacted by livestock grazing and a few small segments by high flows from past timber harvest. A very small segment of Race Creek was impacted by historical grazing and possibly by high flows resulting from timber harvest. The Conejos River has a segment above the reservoir with excessively damaged banks, probably from livestock/wildlife grazing. Raspberry and Brook Creeks had highly altered banks, probably from livestock grazing.	Stream health direction in the Plan is appropriate. No changes are needed.

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
M&E Stream and Riparian health. 36 CFR 219.27a. Level III assessment to measure recovery of damaged streams over time.	Compare changes in channel shape and composition to see if recovery is occurring with prescribed mitigation. (Hydrologist: L. Dobson; Fish biologist: S. Swift.)	Mill Cr. and North Fork Saguache Cr.	Mill Creek has been impacted by grazing. In openings between alder and willow growth, the channel is widened, with highly altered banks compared to the channel within the exclosure. North Fork Saguache Creek also has highly altered stream banks in some segments. Monitoring exclosures have been established to measure differences in stream health with and without livestock and wildlife grazing.	No changes in the Forest Plan are needed.
Assess Soil and Aquatic Resources relative to 36 CFR 219.12 (k)	Visually determine if Standards and Guidelines have been implemented and are achieving the Desired Conditions. (Hydrologist: L. Dobson; Soil Scientist: J. Rawinski; Fish Biologist: S. Swift.)	Soil Standards Verification. Examine implementation of S & Gs in North Fork Saguache Creek.	Soil Standards and Guidelines were followed in most instances during project monitoring. More detail is provided in Soils monitoring section. Bank stability guidance is not being met on the North Fork of Saguache Creek and on portions of Mill Creek. Trends in recovery will be determined. Park and Pass Creek stream health has been impacted by past timber harvest.	Soils S&Gs: No changes in the Forest Plan needed.
Developed Recreation				
M&E Stream and Riparian health. 36 CFR 219.27a. Level II stream assessment to see if watersheds of concern experience stream/riparian damage.	Look for visible evidence of channel damage or water pollution. If visible evidence exists, document with a level III stream health assessment. (Hydrologist: L. Dobson; Fish biologist: S. Swift.)	Streams within watersheds of concern that are identified during level I Watershed assessments.	Stream health problems associated with higher levels of watershed disturbance were identified in segments of Park Creek and Pass Creek.	No changes in the Forest Plan needed.
Customer Survey	Forestwide Market and Customer Survey. (Forest and District Recreational Personnel.)	Forestwide.	This survey was not undertaken in FY98. A survey will be scheduled in FY 2001.	No changes needed in the Forest Plan.
Annual Developed-Site Hazard Tree Inspections	Inspection of Forest's campgrounds and picnic areas for removal of hazard trees. (I&D Specialist & District Rec/Tmbr personnel.)		Annual hazard tree inspections of the Forest campgrounds & picnic areas completed as part of the sites' preseason maintenance inspections. Hazard trees were marked and removed. Large-scale volumes of hazard trees scheduled for District small timber sales program. Hazard tree inspection reports on file @ District offices.	Preseason inspections are working well and will continue. No Forest Plan changes needed.

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
Monitor Ski Area Summer and Winter Activities.	Monitor Wolf Creek Ski Area for compliance with approved summer/winter operating plans. (J. Flaget, S. Hartvigsen.)	Wolf Creek Ski Area.	FY 98 winter & summer operating plans were developed and approved and monitoring inspections made. Inspection reports on file at the Divide RD office. Winter inspections included lift operations, ski patrol operations and procedures, avalanche procedures and operations, ski school operations, and annual billings and payments. Summer activities included continued cleanup and drainage improvement work on the ski area trails, continued reclamation work, construction of silt check basins below the parking area, construction of a new ski patrol building, installation of a 10,000-gallon water tank for snow-making purposes, and the scoping and environmental assessment for the proposed parking-area expansion and Alberta chairlift.	New ski-fee system not yet implemented at Wolf Creek, pending the audit of the ski area. R-2 ski area explosive protocol evaluation still ongoing. The EA/DN for the ski area parking-lot expansion and new chairlift was rescinded and an amended EA/DN will be issued. Core Planning Team needs to review the desired Condition ski area development statement for MA 8.22 and consider making necessary revision.. No other changes in the Forest Plan are needed.
Monitor Forest's special-use permits.	Inspections documented and/or inspection reports MAR 62.5. (Forest and District Rec Personnel.)	Includes Rec Resident permits, O/G permits, rec events, and concession permits.	Worked with one SHG to get a second appraisal regarding the fair market value for the summer home group. A Forest campground operations-and-maintenance prospectus was issued in FY 98, requesting bids for renewal of the conesssion special-use permit. Various special-use permits were reviewed and monitored for their Title VI compliance. R-2 MM standards for trails, special uses, recreation, and wilderness were implemented and used in the FY 98 budget allocation.	A new concession special-use permit was issued in FY 98 and will be implemented in FY 99. The National MM spreadsheets training and data input will be done in FY 99 for developed rec sites, trails, special uses, and general Forest areas. We will continue to monitor our special-use, rec events and resort permits in FY99. No changes in Forest Plan needed.
Assess developed-site actual use compared with projected outputs. 36 CFR 219.12 (k).	? (Concession campground mgrs and FS Campground Hosts.)	All concession & FS campgrounds and picnic areas	Visitor use in the Forest's campgrounds was recorded by our concession campground managers. Average occupancy rates in the District campgrounds were: Conejos Peak- 40%, Divide - Del Norte Area - 42% & Creede Area - 45%. Actual use in FY98 did not exceed the capacity of our facilitiesl Rec use information on file at the SO.	Use in our campgrounds during the 1998 season was up approximately 1% from the 1997 season. Average lenth of stay is 3 to 5 days. No change in Forest Plan needed.
Evaluate Meaningful Measures Rec Component Standards.	Meaningful Measures Monitoring Plan. (Forest and District Rec Personnel.)	Standards for developed sites, dispersed areas, inventoried trails, and special-use permits.	In FY 98, R-2 MM standards were used and implemented for administration of concession and ski-area permits. Visitor information and serving customers were emphasized. R-2 MM categories were used in the FY 98 budget allocation.	The R-2 MM standards and spreadsheets will be replaced by the new National MM spreadsheets in FY 99. No Forest Plan changes needed.

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
Evaluate developed recreation relative to 36 CFR 219.12 (k).	Comparative evaluation for M&E Report. (Forest and District Rec Personnel.)	Forestwide developed-rec Rx Areas.	Forest recreation Objectives, Forestwide Standards, rec Management-Area allocations, Desired Conditions, Standards and Guidelines, and Monitoring Items were used in project EAs and reviewed, and no changes are needed.	No Forest Plan changes needed.
Dispersed Recreation				
Evaluate traditional and nontraditional recreation opportunities.	Trail log inventory using GPS MAR 62.3, 64.3. (Forest Trails Specialist and District Trail Coordinators.)	10-15% of Forest Trails. Dispersed-campsite inventories throughout the Forest.	No trail inventories were conducted in FY 98. The Districts did inventory campsite locations and conditions along major road and trail corridors for input into a GIS database, to help establish a baseline for assessing changes/impacts over the long term. Areas inventoried were Conejos Peak - Chama Basin & Medano Creek; Divide - Upper Rio Grande, Bristol Head, Miner Creek, Pool Table area, Alder Cree;k and Saguache - areas along the Sangre range outside Wilderness over to the Sargent Mesa area. Inventories are on file at the District offices. The campsite maps and other data for entry into a GIS database are still being compiled.	Campsite inventories will be conducted in FY 99. The information collected will be useful in the MM spreadsheets for general Forest areas and in assessing costs associated with these sites. No change in the Forest Plan is needed.
Monitor Representative Watersheds to assess baseline capacity allocation.	Monitor the amount of public and O/G use occurring in identified watersheds. (Forest and District Rec Personnel/RSST.)	Forestwide institutional-use permits.	No specific area was monitored to assess the baseline capacity allocation. However, various institutional-group users were contacted in FY98 and requested to apply for their activity use on the Forest. Response to the request was good, and most institutional groups who applied for use on the Forest were issued permits.	A prospectus was issued in late1998 for institutional users to apply for their 1999 summer use. Applications have been assessed and permits will be issued for the 1999 season. No Forest Plan changes are needed.
Monitor effects of off-road-vehicle use of Forest trails and roads. 36 CFR 295.5.	Assess impacts to the physical, biological and social resources (Indicators). (Forest Rec Specialist/RSST.)	Hunter patrols during hunting season.	The Forest developed travel maps and portal-entry information maps to notify all hunters about the travel regulations on the Forest and areas they could and could not use to retrieve their game. This was a good first step, but more work is needed with the maps and on-the-ground signing to get the travel restrictions posted on a majority of our Forest system trails.	Further assessment of the travel management program will occur in FY 99, and there will be monitoring of the ATV use during hunting season. No changes in Forest Plan needed.

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
Evaluate Dispersed Recreation relative to 36 CFR 219.12 (k).	Comparative evaluation for M&E Report. (Forest and District Rec Personnel.)	Forestwide Dispersed Rx Areas.	Forest dispersed-recreation Objectives, Forestwide and Management-Area Standards and Guidelines, Desired Conditions, and Monitoring Items were used in project EAs and reviewed, and no changes are needed.	No Forest Plan changes needed.
Fire & Fuels				
Assess Fire/Fuels relative to 36 CFR 219.12 (k).	Ocular estimates using photo guides for estimating downed woody fuels. Fuel transects and surveys to determine actual loading and arrangement. On-site inspections. (FMO & Ecologist, Silviculturist.)	Ponderosa pine and mixed-conifer cover types. Cochetopa Hills, lower-elevation sites along the Rio Grande, lower Conejos River.	Evaluation of fuel profiles (loading, arrangement, continuity) was conducted in various mid- to low-elevation areas (mixed conifer, PP, DF) of the Cochetop Hills and near the Conejos River valley. Treatment methods (Rx fire, mechanical) have been developed and appropriate project plans (i.e., burn plans) implemented.	No Forest Plan changes needed.
Health & Safety				
M & E Forest activities relative to National Health & Safety Code and OSHA guidelines.	Review and monitor guidelines on public safety and health. (?)	10% of projects.	Due to an organizational change, a safety officer was not appointed until August 1998; as a result, health and safety will be reviewed in fiscal year 1999.	No Forest Plan changes needed.
Noxious Weeds				
M & E Noxious Weeds relative to 36 CFR 219.12 (k).	On-site invenory, integration of existing information. Inventory information will be entered in GIS. (Forest and District Weed Coordinators: G. Poe, K. Garcia, D. Cox.)	Forestwide.	Noxious-weed inventories were conducted on all three Districts in 1998. Total acreage inventoried was 523, as follows: Conejos Peak District, 173 acres; Saguache District, 150; Divide District, 210. Inventories were concentrated on Forest roads and old timber sale areas.	

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
Scenic Resources				
Determine if project SIOs were met. Assess changes in SIO with respect to ROS.	On-site or photo-point monitoring. (Lanscape Architect: K. Clum.)	Projects where Scenic Resources is a key issue, and special areas such as campgrounds, gravel pits, and utility sites.	On-site monitoring was completed at the recently reconstructed Hot Springs, Garner, and Major Creek Trailheads. All sites met the Scenic Integrity Objectives for the area.	No changes needed in the Forest Plan.
Determine if SIOs were met. Assess Constituent Survey information	Constituent surveys, visitor observations, interviews, and public participation. (Lanscape Architect: K. Clum.)	District roads, trails, and recreation sites.	Constituent Surveys were filled out on the Medano Creek Road (FDR #235) within the Sangre De Cristo mountian range and the Chama Basin Trails (both motorized and nonmotorized; Trail #s 740, #741, and #738) and the Chama dispersed-camping area at the trailhead. Visitor observations (along with visitor correspondence) took place at the previous locations.	No changes needed in the Forest Plan.
Infrastructure				
Assess facilities for compliance with state & federal requirements & FS Handbook/Manual direction.	(1) Inspect dams, facilities, drinking water, road & trail bridges, and FDRs for safety and maintenance. (Forest Engineer.)	50% of Forest bridges, all high-hazard dams, 33% of medium-hazard dams, 20% of low-hazard dams, 25% of all trail bridges, all drinking-water systems as required by the Safe Drinking Water Act, all facilities and all Level 3, 4, and 5 roads.	Bridge inspections were completed as scheduled by contract; dam inspections were completed as scheduled by the State Engineer's office; 10% of the trail bridges were inspected. All water systems were sampled and tested in accordance with the Safe Drinking Water Act; 50% of the facilities were inspected; and all of theLevel 3, 4, and 5 roads were maintained.	No changes needed in Forest Plan monitoring requirements. Inspections and testing will continue as outlined.

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
	(2) On-site inspections to monitor compliance with Travel Management Plan. (Law Enforcement Officers, District Level II Officers, and other personnel as assigned.)	Various locations around the Forest as patrolled by Forest Law Enforcement Officers and other Forest Personnel.	Inspections were conducted through hunter patrols, constituent surveys, and day-to-day contacts by law enforcement officers and other FS personnel. Numerous issues were raised and some citations issued, and the Forest continues to seek compliance with the current travel management plan.	No Forest Plan changes needed.
	(3) Assess planned road closures through on-site inspections. (Engineering & Timber.)	None.	No planned timber sale road closures were conducted in 1998. A road-decomissioning program is scheduled for FY 1999.	No changes needed.
M & E Infrastructure realtive to: * 36 CFR 219.12 (k).	Review and monitor infrastructure-related inspections and reports for compliance with Forest Plan Guidelines and Objectives. (R. Pugh.)	As outlined in the Infrastructure section of the AMOP.		No Forest Plan changes needed.
Minerals				
M & E oil & gas activities so effects do not exceed predicted by 10%	Compare annual & cumulate OG activity. (Minerals specialist: J. Rawinski.)	Forest summary.	There was no oil and gas activity on the Forest in FY 98.	No changes needed.
Verify if areas are compatible with FP stips. Assess if occupancy could be allowed on the lease tract. 36 CFR228.1.2 (e) 1,2,3.	Verification form. (Minerals specialist: J. Rawinski.)	Each lease.	One lease application processed in FY 98 near Trout Mountain. Occupancy could be allowed. Consistent with Plan.	No changes needed.
M & E Minerals program relative to 36 CFR 219.12 (k).	On-site inspections of mineral activities; review reports. (Minerals specialist: J. Rawinski and Fred Martinez.)	Forest Summary.	There are some errata on the oil and gas leasing map. These need to be corrected and noted. Also monitored the proposal for Summitville reclamation and rock needs. Proposed plan will meet FS standards for reclamation, and other resource standards.	No changes or additional analysis needed .

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
Research and Information Needs				
Determine progress of accomplishing needed research.	Questionnaire. (R.Pugh.)	Poll individual RSST members on progress.		
Research Natural Areas				
Evaluate RNAs relative to 36 CFR 219.12 (k).	Ocular, plots, transects, GIS. (Ecologist: D. Erhard.)	Designated Research Natural Areas.	The Mill Creek RNA was visited and visually evaluated. It appears to be receiving very little use. There was no evidence of any conflict with 36 CFR 219.12 (k).	No changes in the Forest Plan recommended.
Range				
M & E Range program relative to 36 CFR 219.12 (k).	Refer to monitoring items that follow. (See below.)	See below.		
M & E Rangeland seral stage to ensure the Desired Conditions.	Various methods and techniques will be derived from RAMTG. MAR Target # 76.1. (Primary: G. Poe; Secondary: G. Snell, J. Jaminet.)	Archuleta, Platoro, Fox Creek, Long Park, Cattle Mountain, Church, Little Beaver, Handkerchief Mesa, Cross/Race, and Alder/Silver.	Total area inventoried on the Forest was 66,707 acres. Inventories by District, including allotments where inventories were conducted, are as follows: Conejos Peak District, 35,736 acres (Archuleta, Platoro, Fox Creek, Long Park); Divide District, 26,741 acres (Cattle Mountain, Little Beaver, Handkerchief Mesa, Church, Cross-Race, and Roaring Fork); Saguache, 3,230 acres (Alder/Silver).	No changes needed in the Forest Plan.
Assess rangeland suitability.	Intensive review at site-specific areas while applying criteria for capability and IDT determination of suitability. (Primary: G. Poe; Scondary: G. Snell, J. Jaminet.)	Archuleta, Platoro, Fox Creek, Long Park, Cattle Mountain, Church, Little Beaver, Handkerchief Mesa, Cross/Race, Roaring Fork, and Alder/Silver.	Rangeland Suitability/Capability determinationations were conducted on the three Districts as follows: Conejos Peak District , 35,736 acres on the Archuleta, Platoro, Fox Creek, and Long Park Allotments; Divide District, 26,741 acres on the Cattle Mountain, Little Berver, Handkerchief Mesa, Church, Cross/Race, and Roaring Fork Allotments; Saguache District, 3,230 acres on the Alder/Silver Allotment.	No changes needed in the Forest Plan.

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
Monitor utilization of rangelands.	Various mehods will be used including: P/U cages, height-weight, stubble height, and ocular estimates. MAR target #75.1. (Primary: G. Poe; Secondary: G. Snell, K. Garcia, T. Post, J. Jaminet.)	Conejos Peak: Archuleta, Cumbres, Fox Creek, Long Park, Big Meadows, Mancos, Platoro. Divide: Church Cattle Mtn., Cross/ Race, Handkerchief Mesa, Decker, Trout, La Garita, Park, Sulfur, E. Pinos, Shaw, Alder, Frisco. Saguache: 33% of the allotments.	Monitoring for vegetation utilization was conducted on all three Districts. About 201,767 acres was monitored for vegetation utilization. Various methods were used, including P/U cages, height-weight, stubble height measurements, and ocular estimates. Allotments monitored by district were as follows: Conejos Peak: Archuleta, Cumbres, Fox Ck, Long Park, Big Meadows, Mancos, and Platoro. Saguache: about 30% of capable acres. Divide District: Church, Cattle Mtn., Cross/Race, Hankderchief Mesa, Little Beaver, Decker, Trout, La Garita, Park, Sulfur, E. Pinos, Shaw, Alder, Frisco.	No changes needed in Forest Plan.
Heritage Resources				
M & E Forest projects to assure heritage resources have been protected.	On-site inspection of National Register of Historic Places-eligible heritage resources identified for protection. MAR 65.4. (Heritage Specialists: V. Spero, K. Frye.)	A variety of past projects, including Creede Landfill Project, 5-Mile Park Timber Sale, Camp Molino Timber Sale, Stand 47 Timber Sale, Buffalo Pass Campground Improvement, Trout Range Allotment, Cow Camp Timber Sale, and Heritage Resource Program sites.	Heritage Resource sites on the Platoro Range Allotment, Trout Range Allotment, Cattle Range Allotment, 5-Mile Park Timber Sale, Stand 47 Timber Sale, Cow Camp Timber Sale, Creede Landfill Project, Buffalo Pass Campground Improvement Project, and the following Heritage Program sites: Clay Mine Site, Bachelor Townsite (5ML29), the Black Mountain Folsom Site (5HN55), and the Upper Crossing Site (5SH73) identified as needing protection during project activities were inspected, with no resource damage detected. Site 5RN330, the Dog Mountain Petroglyph site, was inspected and no additional vandalism was noted.	No changes needed in Forest Plan.

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
M & E Consultations with American Indians.	Review timber sale EAs and other major-project EAs. (Heritage Specialist: V. Spero.)	Project areas with sites that are or have the potential to be considered culturally sensitive to American Indians.	The American Indian Consultation Bulletin (AICB) was issued in November 1997 & June 1998 for the following FY 1998 projects: Handkerchief Mesa Analysis Area, Twister W. Salvage Timber Sale, November Timber Sale, and the Fox Creek Grazinfg Allotment. The AICB is issued for projects with sites that are or have the potential to be considered culturally sensitive to American Indians; otherwise, the RGNF Quarterly Scoping Document is being used as the vehicle for American Indian consultation.	No changes needed in the Forest Plan. The American Indian Consulation Bulletin (AICB) should continue to be issued. An expansion of proposed project types and numbers of should be included.
M & E Heritage Resource progam relative to 36 CFR 219.12 (k).	Summarize HR reports. (Heritage Specialist: V. Spero.)	All Heritage Resource Reports for FY 98.	Reports for proposed projects were sent to the Colorado State Historic Preservation Officer for concurrence.	No changes needed in the Forest Plan.
Scenic Resources				
Deterime if project SIOs were met. Assess changes in SIO with respect to ROS.	On-site or photo-point monitoring. (Landscape Architect: K. Clum.)	Projects where Scenic Resources are key issues, and special areas such as campgrounds, gravel pits, and utility sites.	On-site monitoring was completed at the recently reconstructed Hot Springs, Garner, and Major Creek Trailheads. All sites met the Scenic Integrity Objectives for the area.	No changes needed in the Forest Plan.
Determine if SIOs were met. Assess Constituent Survey information.	Constituent surveys, visitor observations, interviews, and public participation. (Landscape Architect: K . Clum.)	District roads, trails, and recreation sites.	Constituent Surveys were filled out on the Medano Creek Road (FDR #235) within the Sangre De Cristo mountian range and the Chama Basin Trails (both motorized and nonmotorized (Trail #740, #741, and #738) and the Chama dispersed-camping area at the trailhead. Visitor observations (along with visitor correspondence) took place at the previous locations.	No changes needed in the Forest Plan.
M & E Scenic Resource program relative to 36 CFR 219.12 (k).	Summarize reports. (Landscape Architect: K. Clum.)	Forestwide.		

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
Biodiversity				
Monitor change in occurrence of selected native species. 36 CFR219.27	(1) Ripley milkvetch -- use plots and transects. (CSU Ph.D. Candidate: J. Burt; Ecologist: D. Erhard.	Hick's Canyon and Terrace Reservoir	Intensive plot monitoring continued this past summer by researcher J. Burt in her study areas. FY 98 results are due to the Forest by 3/99.	This is the 3rd year of a 4-year Ph.D. study. At the end of the study we will determine if a change is needed in the Forest Plan. No changes recommended in the Forest Plan now.
	(2) Other EIS special-status plants. Photo interp., site visits, GIS, satellite imagery. (Ecologist: D. Erhard.)	Special-status plants are at various sites over the Forest.	Visited one of the known Smith whitlow-grass (*Draba smithii*) sites on the Forest. The population appears to be stable and the habitat more extensive than was originally indicated in the Colorado Natural Heritage Program's Biological Database. There are no apparent threats to this plant or its habitat. New populations of *Machaeranthera coloradoensis*, *Botrychium echo*, and *Astragalus ripleyi* (Sensitive plants) were discovered this year.	No changes in the Forest Plan recommended.

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
	(3) Native Fish Population Monitoring. (Fish Biologist: Sue Swift-M iller; FS Fish Volunteer; DOW.)	North and South Fork Carnero Cr., Prong Cr., Medano Cr., Miner's Cr., and Ivy Cr.	Rio Grande cutthroat trout (RGN) populations were monitored on 6 Forest streams and 3 lakes during 1998 by CDOW and USFS personnel. Population estimates calculated by the CDOW indicate inconsistent trends across the Forest. Of the stream populations, 2 populations were at risk/stable, 1 secure/stable, 1 at risk/declining, 1 secure/expanding, and 1 likely extirpated (see State of the Fisheries Resource for definitions of status). In addition, 1 possible new population was discovered this year (genetic analyses pending). Threats to populations include non-native trout and inadequate habitat, although additional assessment is necessary. Habitat and population assessment work is ongoing, and the USFS and CDOW are working together to address these threats, through habitat improvement projects, barrier repair/construction, and reclamation work. One population of Rio Grande sucker (RGS) was monitored, and although it is too early to determine status, no sign of recruitment was evident. Four additional RGS populations were established on the Forest in 1998.	Because continuous monitoring of populations will ensure rapid detection of invasion by non-natives or other threats, I recommend monitoring native fish populations every 4 years, or more frequently if the situation justifies it. This would provide a method of prioritizing streams that the ''10% of all RGN streams'' criterion does not, and would ensure monitoring occurs often enough to detect problems, but not so frequently as to cause unneccessary disturbance or harm. The number monitored in any year would still be depend on funding. In addition, two other native fish species, Rio Grande chub and sucker, are important species that warrant monitoring. This monitoring section should be called ''native fish population monitoring'' rather than ''Rio Grande cutthroat trout steam shocking.'' Cooperative efforts between USFS (habitat management lead) and CDOW (species management lead) are aimed at ensuring protection of native species populations.
	(4) Boreal toad ocular surveys. (DOW Tech, FS Volunteer, B. Joslin, D. Cox, G. Becenti, and R. Metzger.)	Love Lk./Trout Cr. area, suspected areas on Saguache and Conejos Peak RDs.	A cooperative effort was undertaken with the DOW. Besides the Love Lk./Trout Cr. sites, 67 high-probability sites were surveyed throughout the Forest. No new breeding sites or individuals were located. The Cliff Cr. breeding site was active this year, but the Trout Cr. site was not.	No changes in the Forest Plan needed.
	(5) Peregrine falcon ocular surveys of nests. (DOW Peregrine crew, R. Metzger.)	Known nests.	Three.	No.

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
	(6) SW will flycatcher transects. (Stewart and Joslin.)	The known suitable habitat on CP RD.	Was not accomplished this year because of a change in priorities.	
	(7) Black swift ocular surveys of nests. (Schultz.)	3 suspected nesting locations.	One of the suspected nesting locations (Chama Basin) was surveyed. Multiple adults were seen in the vicinity of a waterfall, but no confirmed nesting was documented.	No changes in the Forest Plan needed.
	(8) Bats ocular surveys of roosts. (Metzger and Navo [DOW].)	Terrace Reservoir.	DOW was unable to get to theTerrace Reservoir site but did survey two suspected locations just off the Forest boundary near the Sand Dunes. He found two new Townsends roosts.	No changes in the Forest Plan needed.
	Standardized point-count transects. (Schultz. Will be doing only the point counts availble funding permits.)	3 stations in general vicinity of Wolf Creek Pass	Was able to complete 86 point counts. Was able to demonstrate that a modest effort could provide enough information to monitor gross changes in some of the species populations.	There needs to be a slight change in methods. Given a concern over study design and budgets, there has been a shift in intent over how best to accomplish the necessary bird monitoring. See the Monitoring 2000 report for details. Basically, the emphasis will be on point counts only.
Monitor the change in selected native species habitat. 36 CFR 219.27.	(1) Snag-dependent species; aerial mapping of current insect, disease, and fire events. (R.Metzger.)	Forestwide	The latest aerial survey of the Forest's insect and disease ''hot spots'' was obtained. This will become the baseline on which future comparisons will be made.	No changes in the Forest Plan needed.
	(2) Animals listed in the EIS. (Wildlife Biologist.)	None	There were no changes to the list.	
Monitor changes in composition, structure, and pattern for each Landtype Association. 36 CFR 219.27.	(1) Photo interp, GIS, satellite imagery, and/or spatial analysis. (Ecologist/Wildlife Biologist.)	All Landtype Associations over the entire Forest.	No monitoring required this year because it is too soon to detect any meaningful changes. We anticipate monitoring this item in year 2006.	No changes in the Forest Plan recommended.

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
Validate the vegetative composition and structure of LTA 1 reference landscape. 36 CFR 219.27.	Photo interp, GIS, satellite imagery, and/or site visit. (D. Erhard, R. Metzger.)	14 reference areas within E. Spruce on Mountain Slopes LTA. Found throughout the upper elevations of the Forest.	The IRI Center in Dolores has completed year one of two years of contract mapping and attributing Common Veg. Unit (CVU) polygons on the Forest. A combination of contractor and IRI Center personnel will complete this work over the next two years. As part of this work, better inventory data will be collected in LTA1 landscapes. Once the IRI inventory is complete, we will determine whether this new information changes our assumptions of LTA1 reference landscapes.	No changes in the Forest Plan recommended.
Monitor changes in CNHP Significant Plant Communities listed in EIS. 36 CFR219.12 (k).	Photo interp, site visits, GIS, and/or satellite imagery. (Ecologist: D.Erhard.)	Special-status plant communities are at various sites over the entire Forest.	Visited the documented piñon pine - one-seed juniper / scribner needlegrass plant community. It appears stable and there are no apparent threats to it.	No changes in the Forest Plan recommended.
Monitor the progress of old-growth (Mehl 1992) inventory and reconnaissance on the Forest.	Ocular, plots, GIS, and/or satellite imagery. (Ecologist, Wildlife Biologist, Forester.)	Entire Forest.	Old-growth inventories were completed for the Houselog (Saguache RD), Handkerchief (Divide RD), November, and El-rosa (Conejos Peak RD) landscapes. To date, Mehl (1992)-defined old growth has been uncommon. On the Divide and Conejos Peak RDs, old growth appears to be limited due to a lack of patchiness, lack of structural diversity, and/or net productivity being too high. Because the Mehl criteria are biased toward more productive sites, the Saguache RD appears to lack the productive capability to meet the Mehl old-growth descriptions.	No changes in the Forest Plan recommended. The old-growth inventorying protocol was significantly refined and field tested this past summer. The Forest's progress toward inventorying old growth improved this year.
Evaluate Biodiversity and Wildlife relative to 36 CFR 219.12 (k).	Ocular, plots, transects. (D. Erhard, R. Metzger, Sue Swift-Miller.)	Forestwide.	Two projects were monitored this year: (1) the Medano Creek drainage area and (2) the Twister blowdown area. Both projects were in compliance with Prescriptions, Standards and Guidelines, Objectives, Suitable lands, Monitoring Plan, and congressional recommendations, with respect to the Ecology, Wildlife, and Fisheries programs.	No changes in the Forest Plan recommended.
Special Interest Areas				
Assess protective measures and interpretive efforts.	Ocular surveys. (Ecologist: D. Erhard; Heritage Resource Specialist: V. Spero.)	None.	No monitoring required this year. This item is to be done once every five years−due in FY 2001.	

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
Evaluate Special Interest Areas relative to: 36 CFR 219.12 (k).	Summarize reports or information from Districts. (Ecologist: D. Erhard; Heritage Resource Specialist: V .Spero.)	None	No monitoring required this year. This item is to be done once every five years−due in FY 2001).	
Soils				
Assure that land productivity is maintained or improved.	(1) Monitor soil quality standards. (Soil Scientist: J. Rawinski.)	FY 98 fire projects monitored include Fullerton Park, Eagle Mountain, Spanish Creek, Royal Park, and Marshall Gulch.	FY 98: Fullerton Park, Eagle Mountain prescribed fires had fully functioning soil health. Spanish Creek and Royal Park wildfires are "at risk," meaning soil health may be threatened by erosion. Until natural revegatation occurs (which is progressing nicely), monitor closely. The Marshal Gulch prescribed natural fire occurred in the Sangres on steep slopes. It has "at risk" soil health for erosion concerns. It also is revegetating naturally very well and is trending toward stability.	No changes in Forest Plan needed. Standards and assessments seem to be working.
		FY 98 Range projects monitored included Archuleta Grazing Allotment.	FY 98: Archuleta Allotment Soil Health Study: Soil samples were collected to evaluate soil compaction and other soil health concerns. Two pastures had fully functioning soil health; one pasture was "at risk" due to reduced infiltration; and one pasture was impaired due to compaction. When Allotment Plan is revised next year, will implement management to correct soil health concerns.	No changes in Forest Plan needed. Standards and assessments seem to be working.
		FY 98 Timber Projects monitored: Twister Salvage Sale and Houselog.	FY 98: Houselog area has at-risk soils in previously logged areas, due to some compaction. Soil impacts occur over 8-15% of area. Still, this is within acceptable standards. Twister Salvage Sale incurred soil impacts during logging from excessive soil moisture. However, mitigation methods were applied and soil impacts were reduced. It is likely that soil impacts were excessive, and appropriate mitigation (ripping, etc.) is planned at sale's termination. Logger and sale administrator made positive efforts to minimize impacts.	No changes in Forest Plan needed. Standards and assessments seem to be working.

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
	(2) Use erosion model to predict erosion or analyze projects after completion. (?)	Projects where high erosion or mass-movement potential exists. Projects where soils is a key issue.	FY 98: No specific need to use this model was identified.	No change needed.
	(3) Ocular estimates, pace transects, on-site, professional judgements to monitor fertility,erosion, mass movement. (?)	See soils projects mentioned above. Plus projects on this row.	FY 98: In addition to above, looked at revegtation, soil erosion projects (East Pass Creek), fisheries projects, highway construction projects, range utilization work, and road obliteration. All soils properly functioning.	No change needed.
	(4) Mass-movement evaluation by monitoring existing and potential problem areas. (?)	Projects where mass-movement potential is moderate or high and other landslide-prone areas, W. Lost Trail Creek, Chama Basin, others.	FY 98: I walked Chama Basin and found no new mass-movement activity. Conditions have been dry in the past decade, and slide activity has lessened. No other mass-movement concerns arose in '98.	No changes needed.
M & E reclamation and reveg efforts.	On-site and/or random transects, review District project records and erosion models. (Soils/Hydrology.)	FY 98 revegetation monitoring: Summitville reclamation and Royal Park fire reclamation.	FY 98: We toured Summitville Reclamation field trials. Response at this high elevation was good, providing lots of soil amendments were applied. Steep slopes will be a concern. Royal Park revegetation is successful. The RG Forest met with Valley agencies to promote use of native seed in reclamation efforts.	No changes needed. We are implementing native plant guidelines.
M & E Soil Productivity relative to 36 CFR 219.12 (k).	Based on group monitoring projects: Medano Creek area. (Soil Scientist: J.Rawinski.)	Relative to soil quality.	FY 98: Some soil compaction in dispersed-camping sites in Medano Creek, but very localized impacts.	No changes needed.

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
Unroaded Areas				
Assess the physical, biological, and social resources within Backcountry Areas.	Assess the impacts on the physical, biological, and social resources (indicators). (Forest Rec Specialist and RSST.)	Chama Basin	The West Fork and Archeluta drainages within Chama Basin were monitored in 1998. Trailhead bulletin boards and information were assessed, dispersed campsites were inventoried along with campsite conditions, and the trail conditions and needs were noted (inventory on file at the SO). Summary of the inventory: Archuleta trailhead needs a new sign showing types of uses allowed on the trail, and the West Fork trail (lower section from the trailhead) is not open to motorized users. Ten campsites were recorded along the trails within the basin. Most were in Condition Class 3 or better. Soil compaction data were taken at a couple of the campsites, but more samples are needed for analysis purposes. Maintenance of water bars is needed on the ATV tra,il and the step section of the West Fork trail needs work, including more waterbars.	No Forest Plan changes needed.
Evaluate Backcountry Areas relative to 36 CFR 219.12 (k).	Comparative evaluation for the M&E Report. (Forest and District Rec Personnel.)	Forestwide Backcountry Areas.	The Backcountry Area Desired Conditons, Standards and Guidelines, Allocations, and Monitoring Items were reviewed and do not need to be changed. In the initial stages of the Handkerchief Mesa assessment work, an error was found in the Fox Mountain (020948) unroaded area. Two areas within this unroaded area have system roads in them, as well as past logging. The Handkerchief Meas EA will deal with this error, and an amendment in the acreage and area boundary will be needed.	An amendment of the Forest Plan will be needed in conjunction with the Fox Mtn. (020948) unroaded area. The acreage and area boundary will be addressed in the Handkerchief Mesa EA, and a Plan amendment recommended. No other Forest Plan changes are needed.

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
Timber				
Restocking of harvest areas. 36 CFR219.2.	Stocking surveys. (Silviculturist[s]: J. Griffin.)	All locations/sites planned for 1st-, 3rd-, and/or 5th-year surveys.	In FY 98, a total of 1,085 acres were certified as being fully stocked. There were more acres actually surveyed, and these are expected to be fully stocked within 5 years. Areas to be planted are noted in the column to the right. As of CY 92, all recent (w/in 15 years) final-harvest-removal survival surveys have revealed 100% stocking. In '93, 1715 of 1883 acres were found to be fully stocked. Some of those acres were 1st- & 3rd-year surveys, and full stocking is expected after 5 years. Similar results were seen with surveys in '94-'97. The RMRIS database and annual NFMA report can be referenced for this information.	No changes needed. Followup surveys to 1st- and 3rd-year surveys will continue. Four areas not meeting stocking requirements (the Royal Pain Fire within the Royal Park Timber Sale, some patch clearcuts within the Grouse Timber Sale, some patch clearcuts within the Cumbres timber sale, and an area of trespass timber near the headwaters of Wolf Creek) are scheduled for planting in late summer of '99.
Assess timber suitability. 36 CFR219.12	(1) Standard suitability determination at Forestwide level. (Analyst/Silviculturist.)	None.	An analytical error was found in the FEIS timber suitability assessment for the revised Forest Plan. The Forest's analyst failed to include Suitable timber lands based on Soils direction for Suitable lands. Timber lands in the los Pinos/Cumbres/LaManga-Grouse areas on the Conejos Peak RD formerly deemed Tentatively Suitable and/or Suitable and Scheduled (in the draft EIS) were errantly identified as Unsuitable.	A Forest Plan amendment is underway to correct the suitability error and may be combined with recommended changes in suitability derived from on-site inspections.

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
	(2) On-site inspection, inventory/growth-yield exams, soil sampling. (Proj. Silviculturalists [J. Griffin, K. Stuart], Proj. Forester[s] and/or Technicians. Timber Sale Administrators [J. Flaget, T. Benedict + B. Valasquez]. Soil: J. Rawinski.)	Pre-sale: Sp. Divide, R. Hondo, Ruston, Park. Crk. Sal, W. Park. Suitable small sales + Beaver Mt., Jarosa. Red Mt., Cliff Salv., Post-Sale: stocking surveys + Royal, Burro, Blowout, Benino TSs.	Other areas assessed for suitability included all the sales in the Handkerchief Mesa Analysis; the sales in the Houselog Analysis; sales in the Jarosa Creede Analysis; and other sales such as Beaver Mountain, Park Creek Salvage, Boot Mountain, and Pinochle Park. No changes or recommendations for changes in suitability have resulted from these asessments thus far. Some individual sites in the Houselog Analysis Area are recommended for a change in prescription, because of the cost of getting roads into the sites. This would remove those areas from the ''experienced budget,'' but would not result in a change in suitability.	Areas previously entered for harvest should not be assumed to be suitable for timber management; conversely, some areas not selected by the suitability assessment for entry (i.e., ''scheduled'' by FORPLAN) should not be assumed to be unsuitable. When suitability status is uncertain, on-site investigations and/or stand exams, coupled with site- specific economic analysis, are necessary to determine appropriate management opportunities or constraints. Additionally, the lack of recent or current stand-exam inventory data in some areas has reduced the reliability of FVS and FORPLAN results, thereby requiring more field time by silviculturists and foresters to ensure timber suitability status is accurate.

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
Assess I & D infestations relative to endemic levels prior to and following management activities. 36 CFR219.12 & 219.27	On-site observation and limited sampling. Can include stat. accurate plots. (Proj. Silvi.: J. Griffin, K. Stuart; Proj. Foresters + P. Metzger, J. Trujillo, P. Minow. Sale-Admin [J. Flaget, T. Benedict, B. Velasquez]. R2 I&D [R. Mask, P. Anguin, T. Eager].)	Active TSs & ongoing Landscape Analyses & post-sale. Also areas undergoing extensive natural disturbance.	I&D infestations were observed in and around the proposed or upcoming Houselog Vegetative Mgt. Area and Park Creek Salvage TS (Saguache RD), Handkerchief Mesa Mgt. Area and Twister TS(s) (Divide RD); Low Country Mgt. Area and Borrego/November TS (Conejos Peak RD); and in/around the ongoing North Park Salvage TS (Saguache RD), the Wolf Creek Ski Area, and in/around the former Grouse TS (CPRD). These observations indicate that Western Spruce Budworm is even more widespread than previously realized, and we can say that virtually all of the Mixed Conifer type on the Forest has budworm at some level. An increase in the level of Mountain Pine Beetle was also noted in the Ponderosa Pine zone on the Saguache District.	Areas found to be exhibiting increasing and/or potentially damaging infestations were Twister, Grouse, and Cross TSs for spruce beetle; Park Creek, North Park Salvage, Borrego/November TSs and the Low Country and Houselog areas, and the Mixed Conifer portion of the Handkerchief Mesa area. This last area was found to exhibit high endemic levels of Western Spruce Budworm. No large areas of blowdown similar to Twister were observed. Other blowdown from the same time period has resulted in scattered blowdowns without high concentrations of insects. Silvicultural techniques should be used, whether in timber sale or other resource emphasis areas, that serve to reduce host habitat for these insects. No changes are needed in the Forest Plan.
Monitor size of harvest openings. 36 CFR 219.27.	Traverses, stocking surveys, on-site. (Proj. Silvi[s]. Proj. Prep Foresters/Forestry Technicians.)	Pre-sale, current active sales, post-sale areas.	Harvest openings were monitored in the following past timber sales: Cross, Demijohn, Poage Lake, Beaver Mountain, Grouse, Red Mountain, Cornwall, Laguna Seca, and Cumbres, and those sales in the Houslog Analysis Area. No harvest openings were found to exceed the 40-acre maximum.	The 40-acre-maximum size limit for even-aged individual cut block, patch, or strip openings has not been approached or exceeded since the 1970s. Most harvest openings created prior to NFMA ('76) are fully stocked and meet or exceed tree heights and % distribution, as noted in Forestwide Silviculture Guideline #4. No change needed in Forest Plan.

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
Assess implementation of silvicultural objectives during pre-sale, harvesting, and post-sale periods	On-site, photo points, density measurements. (Pre-Sale: Proj and consulting Silvi/Prep Forester/Forest Techs & ID team members from EA teams tied to specific TSs. Active contracts: Sale Admin. Post-sale: Same as pre-sale.)	Pre-sale: Sp. Divide, R. Hondo, Ruston, Pk. Crk Salv., W .Park, all small on suitable, + Beaver Mtn., Jarosa. Red Mtn., Cliff Salv., Post-Sale: All / stocking surveys + Royal, Burro, Blowout, Benino TSs.	Monitored following sales: Red Mtn., Fox Mtn., Shaw Lake, Part Stowe, Ford, 5-Mile Pond, Ruston-Kreps, Thunder, Cross, Demijohn, Poage Lake, Campo Molino, Beaver Mountain, the sales in the Jarosa Creede Analysis, and Houselog Analysis, including Spring Gulch, Brown, and California Gulch. On-site observations indicate that objectives were met in some units/sales and not in others. Older shelterwood-system cuts removed more large spruce, retained more small, less windfirm spruce/fir. More recent shelterwood cuts have retained more high-quality large spruce. In some stands, better silvicultural Rx's could have been implemented. Example: several Fox. Mtn stands undergoing partial cuts of overstories could have undergone simulated shelterwood to release fully stocked understories. Planned post-harvest thinnings to reduce subalpine fir density were often not completed, resulting in fir-dominated stands in timber mgt. emphasis areas. More detailed info available in separate sale M&E reports.	Post-harvest assessments are key to adaptive mgt. Older ('80s) sales appeared to focus on products removed from stands, rather than residual/ future stand condition and future management. Retain high-quality spruce, ponderosa pine, and Douglas-fir in shelterwood-system prep/seed cuts; avoid conversion to fir-dominated stands in timber-emphasis areas. Use overstory-removal cuts where healthy, fully stocked understory stands exist. Provide resources for updating stand-exam inventories, particularly where harvesting has occurred since inventory data were collected. Could add emphasis in FP & FEIS/FEIS App indicating that most patch clearcuts are actually simulated shelterwoods whereby a fully stocked understory is being released by removal of overstory.
Assess output performance of TS program quantity components as compared / outputs. 36 CFR219.12	Comparative evaluations (MAR items: 17.1, 17.2, 19.0, 19.1, 20.0, 20.1, 77.1, 77.4, 77.5, 77.8, 77.9, 79.1, 79.2. (Analyst and the Timber Staff.)	Various Forest offices.	Planned outputs were exceeded for reforestation, and the target was met for timber volume offered. There was 50% accomplishment of timber stand improvement planned.	Accomplishment of the volume-offered target was largely due to the Twister Sale. Thus the target was met via a salvage sale. Green offer has suffered, largely due to the judge's adverse decision regarding the Trout Mountain sales, two potential sales totaling 7 MMBF green. It is still unclear whether the Forest will pursue an amendment or drop the Trout Mountain effort altogether.

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
Assess Timber program relative to 36 CFR 219.12 (k).	Comparative evaluations. (TCE Team.)	Various Forest offices.	TCE team reviewed FP (Forestwide) Desired Conditions (Goals), Objectives, and Standards and Guidelines (for Silviculture); reviewed Mgt.-Area Allocations, Prescriptions, and Standards/Guidelines for Mgt. Areas including Suitable timberlands (4.21, 4.3, 5.11, 5.13, and 5.41); and reviewed monitoring approaches to timber-related Desired Conditions. This review and evaluation was documented under 1920-2-3.	Some minor editorial changes are recommended for Forestwide Silvicultural Standards 1, 2, 8; for Guideline 2, and for Management-Area Prescriptions for 5.11, 5.13, and 5.41.
Wild and Scenic Rivers				
Assess the physical, biological and social resources within W/S River corridors.	Assess impacts on the physical, biological, and social resources (Indicators). (Forest / District Rec. Personnel and Core Team.)	South Fork of the Rio Grande and Medano Creek.	Mitigation requirements and construction standards were outlined in the Hwy. 160 EA to protect the resource values of the eligible W/S River corridor associated with this planned improvement. The Medano Creek corridor was monitored this past summer. The report is on file at the SO. From the monitoring that was done, there is a good buffer area between the stream and road. No recreation campsite or use frp, these campsites are impacting the stream. Some impacts were noted at some of the road crossings but are not causing significant water quality problems (reference Hydrology section). It appears that the Management-Area Objectives, Desired Conditions, and Standards are being met.	No Forest Plan changes are needed.
Evaluate W/S River Mgmt Rx Objectives, Desired Conditions, and S&Gs. 36 CFR 219.12 (k)	Comparative evaluation for the M & E Report. (Forest Rec. Specialist and District Rec. personnel.)	Forestwide W/S River Mgmt Rx Areas.	The W/S River Standards, Desired Conditions, Allocations and Monitoring Items were reviewed, and no changes are needed.	No Forest Plan changes needed.

MONITORING ITEM	METHOD and (CONTACT)	PLANNED LOCATIONS	MONITORING ACCOMPLISHED (what, where, results, summarize, references)	EVALUATION (What are the recommendations based on monitoring? Changes needed to the Plan?)
Wilderness				
Schedule for implementation those Priority 1 items outlined in each wilderness Area WIS.	Surveys, data gathering, and reports. (District Wilderness Coordinators, Wilderness Rangers, and Resource Specialists.)	SSJ, Weminuche, La Garita, and Sangre de Cristo Wilderness Areas.	Monitoring items for the Weminuche and SSJ Wilderness Areas included visitor use, campsite condition class, campsite density, meadow health, encounters, dogs not under control and and high-lake surveys. Monitoring actions in the Sangres and La Garita Wilderness did not occur. A summary of the Weminuche and SSJ monitoring items is as follows: Campsite condition class: standard exceeded at Bear, Green, and Red Lakes in SSJ and good in the Weminuche. Campsite densit: standard not exceeded in any compartment surveyed in SSJ but was exceeded in the Hope compartment in the Weminuche. Meadow Health: rangeland health standard was exceeded in the Green, Blue, and Bear Lake compartments of the SSJ and at a site in the upper Weminuche Pass area in the Weminuche. Encounters: standards for trail encounters, large- group encounters, and campsite encounters was not exceeded in any of the surveyed compartments in the SSJ or Weminuche. Dogs not under control: standard was exceeded in the Green Lake area of the SSJ and Squaw Lake compartment of the Weminuche.	Those compartments that show the Standard was exceeded will need to be monitored again this season and some additional actions implemented. No changes needed in the Indicators to be monitored per the Wilderness EA.
Evaluate Wilderness Forestwide Goals, Objectives, S&Gs and Wilderness Mgmt Rx Objectives, Desired Conditions, and S&Gs. 36 CFR 219.12 (k).	Comparative evaluation for the M&E Report. (Forest Rec. Specialist and District Widlerness Coordinators.)	Forestwide Wilderness Mgmt. Rx Areas.	The Wilderness EA was completed and Decision Notice issued, which amended the Forest Plan to include the Wilderness Desired Conditions, Management Area Prescriptions, Standards and Guidelines, And Management Actions (Indicators to be monitored).	A Wilderness amendment has been completed. No other Forest Plan changes are needed.

Monitoring State of the Resource Reports

Air Quality

Air quality for the Forest is excellent. It remains an outstanding feature that people come to enjoy. Beautiful scenery is enhanced by long visual distances. Some impacts occur from burning, but are quickly dissipated by stable atmospheric conditions. Regional haze diminishes visibility; however, visual distances remain among the best in the country.

The most sensitive high-elevation lakes are being monitored. Most recent results are not available from the lab yet. No additional information is available from lichen monitoring.

Timber

Timber resources across the RGNF are suspected to reflect structure and composition within a natural range of variability. Some short-term human influences have affected and are still affecting the structure and composition of forested communities, particularly lower-elevation forest cover types.

On-site field monitoring during the summer and fall of 1997–98 of primarily past timber sales revealed the following (as tied to monitoring Objectives):

Restocking

Regeneration of areas harvested since the mid-'70s, when the Forest switched from largely clearcutting to partial cutting (mostly shelterwood), has been consistently successful with natural stocking. The naturally occurring annual addition of new trees in spruce-fir forests (the most common and most actively managed forest cover type on the Rio Grande) has resulted in ample stocking; partial cutting has repeatedly made available additional growing space for more new trees. Four areas that have not regenerated to meet minimum stocking standards and that are scheduled for planting in the late summer of '99 are:

- Wolf Creek (near Flat Mtn. Yurt and within the proposed El Lobo Timber Sale). A 10-acre area was harvested illegally around 1970 (with logs skidded onto and hauled off adjacent private land).
- The Royal Pain Fire (within the Royal Park Timber Sale). A wildfire began in or near an active timber sale. Logging slash burned extremely hot, and existing advanced regeneration was destroyed.
- Grouse Timber Sale. Some patch clearcuts in this past sale are not expected to regenerate fully.
- Cumbres Timber Sale. Some patch clearcuts in this past sale are not expected to regenerate fully.

Timber Suitability

An advantage of the Revised Forest Plan timberlands-suitability assessment over the original Plan is the ability to trace suitability status to any and all Forest stands. Also, Suitable and Scheduled timberlands can be tracked as to which decade within the 200-year planning horizon appears most appropriate for planning harvest treatments (i.e., when stand growth or condition has reached a stage highly suited for harvesting). These capabilities were not possible with the 1985 Plan.

Timber suitability and associated allowable sale quantity can be estimated through the use of advanced models, but still require field verification and/or current and accurate stand-exam data for support. Since FVS and FORPLAN modeling assume a "point in time" assessment of stand condition, accessibility, and economic environment prior to estimating growth over time, one should not assume that results of such modeling reflect true on-the-ground conditions, particularly if stand examination data are either old or have not been updated following timber stand treatments.

Timber management personnel on the Forest will continue to gauge the timber-suitability assessment against observed forest conditions and make adjustments where appropriate. This will involve documenting and justifying why some modeled Unsuitable timberlands are actually Suitable, and vice versa.

Insect and Disease Infestations

There is potential for future spruce beetle infestations of high endemic or epidemic proportions in some former and/or future timber sale areas. Over the last three years, FS entomologists have observed increasing populations of spruce beetle, and associated killing of overstory spruce, in the Cliff, Grouse, and Twister Timber Sale areas.

Western spruce budworm (WSB) populations are at high endemic levels in many of the Forest's mixed-conifer stands, and are being found at moderate levels in subalpine fir in the lower or warmer bands within the spruce-fir zone. Limited harvesting and/or burning of these sites, coupled with continued fire suppression (and perhaps grazing by domestic livestock and elk), is maintaining or increasing readily available host habitat for WSB, and resulting in continued moderate to severe defoliation of true firs and Douglas-fir.

High stocking levels, compositional shifts to greater proportions of favored host tree species (e.g., Douglas-fir and true firs), and changing stand structure to more small-diameter stems and uneven-

aged/multicanopied conditions are together resulting in favoring WSB survival.

Harvest Openings

Harvest openings from recent, current, or proposed timber management have not approached, and/or are not expected to approach, the 40-acre limit.* Most harvest openings are less than one acre. Past created openings exceeding the 40-acre limit generally trace back to the clearcutting of the '60s and early '70s, and most are fully stocked with sapling or pole-sized trees. (An exception to this could be the proposed Twister Timber Sale(s) arising from the Fisher Mountain Tornado blowdown. This exception is fully authorized under 36 CFR 219.27(d)(2)(iii).)

Silvicultural Objectives

Monitoring and assessment of silvicultural objectives as tied to timber management were not required prior to the revised Forest Plan, and if performed were generally not documented. Field observations of past sales, conducted in 1997−98, revealed that:

- Most timber management under the revised Forest Plan will take place in stands that have previously undergone varying treatments of the shelterwood system.

- Many preparatory and seed cuts of shelterwood, initiated primarily during the '80s, both intentionally and unintentionally removed many of the large dominant spruce in spruce-fir stands, leaving smaller, less windfirm spruce and fir. Similarly, partial cutting of mixed-conifer stands removed larger and more valuable ponderosa pine over Douglas-fir (and Douglas-fir over white fir), pushing composition and structure of stands toward late-seral conditions (multi-aged/canopied stands dominated by more shade-tolerant Douglas-fir and white fir).

- Many treated spruce-fir stands currently in a second-growth phase reflect an even greater shift in composition to true fir dominance, because planned post-harvest thinnings to reduce subalpine fir density were often not done, thereby retaining a high proportion of fir poles and saplings.

- More recent shelterwood treatments (e.g., the Part Stowe and Red Mountain Timber Sales) have emphasized retention of dominant high-quality spruce, with greater emphasis on removal of small, poorer-quality fir and spruce.

- Some silvicultural treatments involved partial cuts in the overstory when fully stocked next-generation understories were available for release. Where harvesting is planned in areas emphasizing the production of timber products (i.e., Management Area 5.13−Forest Products), the simulated- shelterwood method could be used to a much greater extent, to release established understories where potential for growth is high. If not, continued suppression by overstories will reduce the potential of understory trees for future release, lead to fir-dominant stands of lower commercial value, and, in some cases, increase the potential for damage from insects and disease by fostering dense, low-vigor, susceptible stands.

- In spruce-fir stands in recent years, there has been a shift from shelterwood-dominant to group-selection-dominant harvesting. But in most cases, opportunities for meeting objectives for uneven-aged target stands have been overridden by the emphasis on harvesting only within groups (in contrast to harvesting within and between groups). As a result, desired UEA stand conditions will take more time to achieve, and allowable-sale-quantity goals have been (and may continue to be) more difficult to accomplish.

- The varying implementation of shelterwood harvests and other harvest methods, coupled with natural disturbances, has maintained a diverse Forest environment in and around areas managed for timber production.

  Indirectly affecting silvicultural-treatment objectives is the influence of "no bid" sale offerings. The Forest's reliance on the timber industry as the primary means to accomplish silvicultural objectives cannot be met when viable bids are not forthcoming. The Forest has been working cooperatively with Regional Logging and Appraisal Specialists to design and appraise timber sales that meet resource management objectives, while providing economically desirable opportunities for efficient purchaser operations.

Output Performance

There are various ways to measure timber resource outputs.

* "Harvest openings" are here defined as final-harvest treatments such as clearcuts/coppice, final overstory removals of shelterwood or seed-tree systems, or groups from group-selection systems. Smaller openings created from removal of individual trees or small clumps of trees, as in single-tree-selection harvests, are generally too small to be considered as openings. Also, not all overstory-removal harvests create openings, because in many instances, a fully stocked understory of sapling- and pole-sized trees is already fully established, particularly in spruce-fir stands, and the released stand exceeds trees per acre, average height, and distribution criteria for Silvicultural Guideline #4, "Opening Guidelines" (see page III-21 of the revised Forest Plan).

Some tie to acres treated, some to volumes of material harvested (in either cubic or board feet).

Several key outputs are displayed in the Management Attainment Report (MAR). Following are MAR timber resource outputs for fiscal year 98.

Item	Measure	Planned	Accomplished	% Accomplishment
Reforestation	Acres	900.0	1382.00	154
TSI*	Acres	490.0	478.00	98
Timber Volume Offer	MMBF	9.3	8.57	92

*Timber Stand Improvement (usually thinning).

With volunteers aiding RGNF timber technicians in regeneration surveys, 482 extra acres were surveyed. These surveyed acres also counted toward meeting reforestation treatment needs generated by final-harvest removal treatments (clearcuts/coppice, shelterwood overstory removal, or group-/single-tree-selection harvests). (All areas surveyed were certified as meeting stocking requirements for new stands.) Ninety-eight percent of planned thinning goals were met.

Timber volume offer was 92% of that planned. Completed stand-exam inventory totaled 3,507 acres.

As alluded to earlier, past high-grading; heavier than normal harvests; harvesting on steep, rocky, or wet ground; the retention of less valuable trees (from a wood products standpoint); and the elimination of roadless areas have all contributed to a reduction of expected volume. This has had, and will continue to have, an influence on output performance, particularly in acres treated and volume outputs. The Region has agreed to provide funding for the Forest to pursue the judge's decree concerning amending the Trout Mountain EIS. But whether or not the potential volume (7.0 MMBF) will ever be offered is still uncertain.

Recommendations

Following are suggested changes in the revised Forest Plan.

- Forestwide Standards and Guidelines: Page III-17, Silviculture Standard #1, change all references to CFR's with"(l)" or "(lll)" to "(i)" or "(iii)."

  Rationale: to be consistent with the correct style of the CFR.

- Change second sentence in Silviculture Standard #2 to read, "Even-aged, two-aged, or uneven-aged management systems can be used and applied...".

  Rationale: to better reflect the various management systems and to be consistent with Table III-4 below (on same page).

- Either delete Silviculture Standard #8, page III-20, or change it to read, "...Regulated timber harvest activities will occur on only those lands classified as 'Suitable' for timber production (See Figure III-1). On Unsuitable lands not precluded from timber harvesting, timber cutting may occur for such purposes as salvage, protection or enhancement of biodiversity or wildlife habitat, scenic-resource management, or to perform research or administrative studies consistent with Management Area direction."

  Rationale: The current wording ties our hands unnecessarily, and denies us the flexibility we need as we examine timber stands on the ground. The NEPA phase of a project reviews Suitable/Scheduled on a specific-area basis. On a Suitable but Not Scheduled area, we might want to combine a salvage or intermediate treatment with a regeneration harvest in an area, but cannot do so under the current wording.

  An example is the Houselog area. Much of the mixed conifer is so impacted by insects/disease that our harvest should be looking at regeneration harvests. But since most of those sites are not "scheduled," we are applying sanitation/salvage to make it fit.

  Also, the economics of treating several stands is impacted by the current Standard. Adding an area that is Suitable but Unscheduled can improve the viability of a sale.

  In addition, there are numerous sites that are silviculturally ready for regeneration harvests, but are not Scheduled. We also find there are some sites that are Suitable and Scheduled (for example,

some "trashy" aspen sites), yet there are adjacent stands with good sawtimber that are not scheduled, even though there are good access, reasons to treat, and good economics.

This Standard was adopted as required by the Regional Guide at the time of RGNF Plan revision. It has since been dropped as a requirement in current Plan revisions in the Region, largely due to the loss of flexibility as described by the term "scheduled."

Moreover, "scheduling" can be accomplished only through running FORPLAN or similar programs, and, as such, is merely a point-in-time assessment of Suitable/Scheduled lands at the time of the FORPLAN run. A slight change in costs or benefits assumed in a FORPLAN analysis will alter the results (e.g., a quarterly drop or rise in timber revenue/unit of measure). As such, scheduling is merely a tool to determine ASQ in a sustainable pattern over a planning horizon, and was not meant to select the only suitable lands to be managed over the 10−15-year life of the current Forest Plan.

- Change Silviculture Guideline #2, page III-20, second sentence, to read, "...as to perpetuate a range of environmental conditions...".

  Rationale: The word deleted, "this," is not defined or identified until the third sentence, leaving the reader questioning, "*What* 'range of environmental conditions'?"

- Management-Area Prescriptions: Page IV-25, under Setting for General Forest and Intermingled Rangelands, delete from second sentence, "...however, uneven-aged management systems are more likely to occur."

  Rationale: This may or may not be true, particularly in mixed-conifer or lower-elevation spruce-fir stands where uneven-aged systems may promote western spruce budworm habitat and accompanying defoliation.

- Page IV-25, under Desired Conditions for 5.11, add, "Suitable timberlands will be managed to provide a sustainable flow of forest products."

  Rationale: This adds a Desired Condition statement for timber, as there is for the other resources. Though the production of forest products is mentioned in the Prescription Category 5 Discussion, and again under Theme and Setting for 5.11, the Desired Condition was omitted, even though this MA, along with 5.13, was modeled in the FEIS as part of the Forest's primary timberlands.

- Change the fourth Desired Condition, under the Forest Products Management Area Prescription on page IV-27, to "There are adequate old-growth components in forested stands."

  Rationale: to be consistent with MA 5.11.

- Change Standard #2 in the Deer and Elk Winter Range Management Area Prescription, page IV-29, by deleting "...with resource constraints."

  Rationale: All Management Area Prescriptions have resource constraints. Also, this statement will then be consistent with similar statements in other Suitable Management Area Prescriptions.

- Monitoring approaches: There are questions as to the most effective and accurate means to assess stand-by-stand timber suitability and/or the meeting of silvicultural objectives. Both objectives tie to output performance, as well. Most observations were made by experienced foresters, but without the time and personnel to perform statistically accurate assessments.

  Reduced resources for stand-examination inventories, coupled with the one- to two-decades-old status of much of the Forest's available inventories, has made estimates of timber stand conditions less accurate during planning stages, both at the project and Forest levels, than in the 1980s, when funding for timber inventories was at a much higher level. Hence there is some concern about the accuracy of FVS and FORPLAN outputs, and therefore about the accuracy of the estimated allowable sale quantity.

  Commitments to increasing resources for updating stand inventories, to managing the Suitable Timberlands base, and to continue assessing timber resource conditions and management activities are needed to fulfill the objectives for timber resources set forth in the Revised Forest Plan.

Range

Rangelands are being managed for a variety of seral stages, with most of them in upper mid-seral to high seral condition. Inventory of rangelands conducted in FY 1998 indicated that while there are a variety of seral stages found throughout the Forest, there is an imbalance of seral-stage classes. There is not enough representation in the upper-seral condition classes. Environmental analyses have been initiated to improve management and correct deficiencies.

Noxious Weeds

Noxious weeds are a persistent problem on the Forest. Inventories and control were conducted on the

Forest in FY 1998. Those species that appear to have increased or have been inventoried more thoroughly are leafy spurge, yellow toadflax, and whitetop. Oxeye daisy was found at three locations on the Divide District this year.

Fisheries

The Desired Condition for Biodiversity is to maintain viable populations of native species. The following paragraphs summarize the state of the fisheries resource on the RGNF relative to biodiversity and the 1998 Monitoring Plan.

The Colorado Division of Wildlife (DOW) lists 37 streams on the RGNF as potentially supporting Rio Grande cutthroat trout (RGN) historic populations (can include both natural and transplanted populations; *Status of Rio Grande Cutthroat Trout in Colorado*, Colorado Division of Wildlife, 1998). Twenty-two of these refugia populations are historic or wild, and 15 are transplanted. Thirty-three waters (streams and lakes) on private land also support RGN historic populations (*Status of Rio Grande Cutthroat Trout in Colorado*, Colorado Division of Wildlife, 1998). In addition, about 40 waters on the Forest have been stocked with RGN and are considered RGN management populations, rather than historic populations.

It is unknown whether these management populations will naturally reproduce; because their long-term viability is uncertain (they are often stocked in marginal habitats that may not support natural reproduction, and non-native trout are frequently present), they are not considered refugia populations. Management populations are managed as recreational put-and-grow fisheries.

Six historic populations on Forest lands were monitored during 1998 by USFS and DOW personnel. Population estimates calculated by the DOW indicate inconsistent trends in populations across the Forest, suggesting that site-specific factors play the strongest role in population stability. Population status was identified as follows: two populations "at risk–stable," one population "secure–stable," one population "secure–expanding," one population "at risk–declining," and one population is presumed extirpated.

All the following definitions are from *Status of Rio Grande Cutthroat Trout in Colorado* (Colorado Division of Wildlife, 1998):

> "At risk–stable": a self-sustaining population that is impacted by habitat degradation or encroachment by non-native trout. Population trend is not increasing or decreasing in biomass and density.
>
> "Secure–stable": a self-sustaining population that is secure from impacts of habitat degradation or encroachment by non-native trout. Population trend is not increasing or decreasing in biomass or density.
>
> "Secure–expanding": a self-sustaining population which is secure from impacts of habitat degradation or encroachment by non-native trout. Population trends indicate increasing biomass and density.
>
> "At risk–declining": a population that is impacted by habitat degradation or encroachment by non-native trout. Population trends indicate decreases in recruitment, biomass and density.

Of the three "at risk" RGN populations sampled in 1998, two were considered at risk due to non-native-trout encroachment and the third showed no sign of recruitment. The site of the extirpated population now hosts brown and brook trout, two non-native species.

Because non-native trout are a primary threat to the stability of RGN populations, continual monitoring of these populations will ensure rapid detection of invasion by non-natives. FS biologists are working with the DOW to install barriers where none currently exist, or improve barriers that have failed. Two barriers are planned for installation in 1999. Non-native trout are known to occur in 16 of the 37 RGN populations on the RGNF.

An additional threat to RGN populations can be habitat loss or degradation. Further evaluation regarding the decline of populations and the role that habitat may play in this decline is necessary. Preliminary habitat evaluations or evaluations for input to environmental analyses were conducted on six native fish streams in 1998, and resulted in several projects to improve habitat. Habitat evaluations are ongoing, and the DOW and the FS are working together to identify and address habitat concerns.

In addition to historic RGN waters, three management waters were also sampled in 1998. These populations of RGN were established in 1997, and it is believed too early to determine population status, although there is no evidence of recruitment yet (John Alves, CDOW, pers. comm.).

Four new populations of Rio Grande sucker were established on the Forest during 1998, and one previously transplanted population was monitored. It is too early to determine the status of this population, but again, no recruitment was evident in this population yet (John Alves, CDOW, pers. comm.).

It is difficult to assess whether the Revised Forest Plan Direction, Desired Conditions, Standards, and Guidelines are effective in protecting biodi-versity, in terms of the fisheries resource, because few projects have been implemented that have incorporated the Plan's direction (due to how new the Plan is). Continued monitoring will allow FS biologists to assess the need for changes, but no changes in Forest Plan Direction, Desired

Conditions or Standards and Guidelines are warranted now.

Research Needs

There is a need for additional native fish inventory work. The DOW conducted intensive systematic fish surveys in the 1980s, and determined that all native fish populations had been identified. However, a possible new population of RGN was discovered during summer 1998 by Colorado Natural Heritage Program biologists (genetic analysis has not been completed), emphasizing the need for additional inventory efforts.

Recommendations

1. Native fish populations should be monitored at least every four years, because site-specific factors play the strongest role in population stability, and because continual monitoring of populations will ensure rapid detection of invasion by non-natives or other threats. This would provide a method of prioritizing streams that the "10% of all RGN streams" criterion does not, and would ensure that all populations are continually monitored, but not so frequently as to cause unnecessary disturbance or harm.

   Using this criterion, a total of nine streams would be recommended for monitoring in 1999. The number to be monitored in any one year will be more reasonable (six or so streams per year) once we have caught up on the backlog of streams in need of monitoring.

2. Rio Grande chub and Rio Grande sucker are important native species that warrant monitoring.

3. This monitoring section should be changed to read Native Fish Population Monitoring, to incorporate Rio Grande chub and Rio Grande sucker into the Monitoring Plan.

4. Habitat evaluations provide critical information and identify resource needs, and should continue to be emphasized.

Soils

The Desired Condition for soils is to maintain or improve soil health. The following paragraphs summarize the state of the soil resource on the RGNF.

The Forest has developed a soil-health-monitoring protocol that identifies the current "health" of the soil. Soil consists of both biotic and abiotic components, and its health is measured by using indicators, much like a health checkup for humans. If some indicators show concern, then corrective actions need to occur. Soil health classes are "properly functioning," "at risk," and "impaired."

When properly functioning, soils do not require management adjustments or mitigation. When "at risk" conditions exist, however, some concerns are raised to management, and mitigation may be recommended. "At risk" soils can be within allowable standards, but are generally precautionary in nature. "Impaired" soils are exceeding detrimental soil impacts, requiring mitigation to restore productivity. Soil health ratings are shown by project in the attached tables.

Soil health assessments were made at prescribed-fire locations. Both Fullerton Park and Eagle Mountain prescribed-fire locations had fully functioning soil health. Spanish Creek and Royal Park wildfires are "at risk," meaning soil health may be threatened by erosion. Until natural revegetation occurs (which is progressing well) we will continue to monitor closely. The Spanish Creek Fire has actually improved from "impaired" status to "at risk," as the revegetation process is healing the exposed soil surface. The Marshal Gulch prescribed natural fire occurs in the Sangre de Cristo range on steep slopes. It has "at risk" soil health for erosion concerns. It also is revegetating naturally very well and is trending toward stability.

A detailed soil health assessment was conducted on the Archuleta Allotment in Chama Basin. Because of landslide hazard, erosion, and sedimentation issues that were raised in a past lawsuit, a more intensive sampling effort was implemented. Soil samples were collected to evaluate soil compaction and other soil health concerns. Two pastures had "properly functioning" soil health; one pasture was "at risk" due to reduced infiltration; and one was "impaired" due to compaction. When the Allotment Plan is revised next year, the Forest will implement management to correct soil-health concerns.

The Houselog area is a proposed timber sale analysis area. A soil health assessment on one of the extensive soils in that area (Seitz soil) showed "at risk" conditions in previously logged areas, due to some compaction. Soil impacts occur over 8-15% of the area. Still, this is within acceptable standards. Twister Salvage Sale incurred soil impacts during logging from excessive soil moisture. One of the major reasons this occurred was due to logging difficulties encountered when the jack-strawed blowdown timber was logged. Heavy late-summer monsoonal moisture exacerbated the problem. However, mitigation methods were applied and soil impacts minimized, given the conditions. It is likely that soil impacts were excessive, and appropriate mitigation (ripping, etc.) is planned at the sale's termination. Loggers and sale administrators made positive efforts to minimize impacts.

Long-term-monitoring locations were established in various projects across the Forest. Marshall Gulch prescribed natural fire, Spanish Creek Escaped Wildfire, Twister Timber Salvage Sale, and Archuleta grazing allotment all have permanent monitoring

locations to see how soil conditions might change over time.

The Forest Plan Goal for soil and watershed improvements under the selected Alternative G is 201 acres per year. In FY 98, the Forest accomplished only 80 acres, primarily due to funding shortfalls. The Forest's watershed team is well capable of accomplishing the 200 acres per year if funding permits. Successful projects for FY 98 included repair and maintenance of Crooked Creek erosion structures; North Fork Saguache Creek fisheries, soil, and watershed improvements; ripping and waterbarring in the Beaver/Race Creek areas; and restoring soils in the cinquefoil-removal areas on the Pool Table Road. No changes in Plan needed.

Conclusions

The Forest Plan is successfully protecting the soil resources. Resource specialists across the Forest have shown serious commitment to soil stewardship practices and are to be commended. The Revised Forest Plan Direction, Desired Conditions, Standards, Guidelines and Monitoring Plan seem to be effective in protecting the soil resources and are being implemented.

Each project environmental analysis includes the soils Standards and Guidelines as required mitigation. Every attempt is made to assure proper implementation. If problems arise during project implementation, the soil scientist is called upon to visit the site and offer assistance. No changes are necessary in the Revised Forest Plan relative to soils direction.

Aquatic Resources

Watershed disturbances are highest in areas of past timber harvest. High levels of watershed disturbance seem to affect stream health in some areas on the Forest, but not in others. This appears to be mostly related to amount of precipitation and watershed slope or steepness. Areas of low precipitation and gentle slopes can tolerate more watershed disturbance before stream health begins to be impacted. The location of disturbances and how they are mitigated are more important criteria in these areas.

A small drainage in the Rio de los Pinos watershed has had enough disturbance to be identified as a watershed of concern. This same watershed had road crossings that were badly eroded and fine sediment was evident in the stream channel. Hicks Canyon, within the November Timber Sale area, is also a watershed of concern, but is a dry channel without evidence of erosion through most of its length.

Adequate to robust stream health is the norm. The health of some streams, however, has been diminished by management activities. Some steep subwatersheds in the Pass and Park Creek watersheds have had heavy timber harvest in the past. Channels in these subwatersheds are excessively wide and have delivered excess sediment to the mainstream below. These impacts are minor in extent.

Portions of Park Creek, especially in Trail Park have been impacted by livestock in the past and still have unstable stream banks.

A small portion of Race Creek has multiple channels and eroded banks because cattle were salted next to the stream in the past. The rest of Race Creek looks robust and similar to a reference stream.

Stream banks are highly altered in parts of Mill Creek and North Fork Saguache Creek. The trend of conditions on these streams is being studied.

A portion of the Conejos River above Platoro Reservoir has unstable stream banks. Some streams on adjacent BLM land also show signs of cattle impacts. Dorsey Creek and San Luis Creek on BLM land are grazed by livestock but have robust health. Big Springs Creek has enough sediment that the Forest identified it as impaired.

Remediation of problems is being planned as part of Allotment Management Plan updates and timber sale projects. Where needed, additional fences are being considered. Monitoring is planned to determine if problems are resulting from livestock or wildlife. Roads with poor drainage are being reconstructed and maintained as part of timber sale projects. Extensive watershed restoration work has been completed in the Park Creek watershed, the Big Springs Creek watershed, and the North Fork Saguache Creek watershed. Additional water developments are being constructed and better salting locations selected.

Minerals

Minerals activities consist of three major mineral resources: locatable (hard rock), leasable (oil and gas), and common-variety mineral materials. There were few activities in locatable minerals, with most actions being small in size and effect. There were no major proposals.

The leasable-minerals program saw one application to lease about 10,000 acres near Trout Mountain. On-site monitoring occurred and verification confirmed that occupancy could be allowed in some places on the lease. One problem became evident: RIS sites (forest cover types used in the Forest plan as planning units) do not form the most logical boundaries for lease stipulations. There is no need to amend the Plan, but some boundary adjustments may be necessary from time to time.

Mineral materials are needed at the Summitville site for reclamation purposes. This project is within the scope of the Forest Plan and is being analyzed as of this writing.

Conclusions

No changes are needed in any Minerals portions of the Plan.

Ecology (Vegetation, TE&S Plants, and Research Natural Areas)

The Ecology Program was responsible for monitoring Research Natural Area (RNAs), Special Interest Areas (botanical areas), and plant-related items in the Biodiversity section of the Monitoring Plan. The plant items were as follows: (1) fine-filter assessment of plant species (*Astragalus ripleyi* and other special-status plants) and (2) coarse-filter assessment of habitat (Landtype Association status; special-status plant communities; and old growth). Finally, the Ecology program was responsible for making a determination of whether the biodiversity-related Goals, Desired Conditions, Standards and Guidelines, and Prescription allocations (per 36 CFR 219.12 (k)) were being met or were still appropriate.

A brief assessment of each of these topics can be found in the FY 98 M&E Table, so they will not be reiterated here. Overall, the Forest appears generally to be meeting the Goals, Desired Conditions, and Standards and Guidelines for the Ecology resource as intended in the revised Forest Plan. Based on monitoring this past year, there is nothing to indicate that a change in Management Area Prescription allocation is needed, relative to the Ecology resource. The most significant findings this year were new discoveries of populations of Colorado tansy-aster (*Machaeranthera coloradoensis*), echo moonwort (*Botrychium echo*), and Ripley milkvetch (*Astragalus ripleyi*). The Forest made significant progress in old-growth-inventory accomplishment. The Forest also revised and field tested the old-growth-inventory protocol.

Heritage Resources

The Forest made good progress in conducting the Heritage Resource monitoring called for in the FY 1998 Annual Monitoring Operation Plan (AMOP). The monitoring of several completed projects of different types where heritage resource sites were identified for protection indicates that protective measures are adequate to ensure the protection of sites. The monitoring of Heritage Resource Program sites not associated with a project that have the potential to be vandalized should be continued, to comply with established Standards and Guidelines.

The American Indian Consultation Bulletin (*AICB*) should continue to be a vehicle for consulting with American Indian people concerning projects that may impact cultural sites important to them. Expansion of the numbers and types of projects included in the *AICB* is recommended, to comply with Standards and Guidelines. Additional face-to-face consultation should also be done, to supplement the *AICB* for certain projects. The review of Heritage Resource Inventory Reports for FY 1998 indicates that projects with the potential to impact Heritage Resources are being inventoried, and protective measures are adequate.

Special Interest Areas

No monitoring is required this year. This item is to be done once every five years, and is due in FY 2001.

Recreation

Developed Recreation

Developed Sites

The Forest awarded a new long-term concession permit for the operation and maintenance of a majority of our developed recreation sites. Campground upgrades and meeting accessibility standards are scheduled within the next few years.

Ski Area

Wolf Creek continues to do major reclamation work during the summer months on its ski trails, parking areas, and other facility and area upgrades. The parking lot expansion and Alberta Lift EA/DN is being revised and should be reissued shortly. It is recommended that the Planning core team review the MA Prescription 8.22 Desired Condition statement for development on the ski area and consider revising this statement.

Special Uses

Consistency in special-use-permit administration and monitoring continued in FY 98. Title VI compliance reviews were achieved in FY 98. Emphasis areas focused on getting prospectuses out and awarding permits for Forest campground concession and to institutional groups who plan to use the Forest during the FY 98 and FY 99 seasons. The Forest will be implementing the new 251 regulations.

Meaningful Measures

The new National MM spreadsheets for developed recreation, trails, General Forest Areas, and special uses are in place, and Districts are inputting the data. Deferred-maintenance inventories are scheduled over the next five years (20% a year) for developed recreation sites and trails on the Forest. As this information is collected, the MM spreadsheets will be updated.

Dispersed Recreation

Trails

No trails were GPS to update our trails inventory. Twenty percent of our trails will be inventoried in FY99.

Road and Trail Campsite Inventories

Districts did inventory campsite locations and conditions along numerous Forest roads and trails. These data are still being compiled for input into a GIS database, for tracking the total number on the Forest and for costing purposes. This inventory work will continue in FY 99.

Unroaded Areas

Chama Basin was looked at this past year, and it appears we are meeting our management objectives in this Management Area. This area needs to be checked occasionally, and during the hunting season, to inform motorized users to remain on designated trails.

Wild and Scenic Rivers

Medano Creek was monitored this past season by numerous specialists. The area appears to be in good condition, and buffer areas are present between the existing road and the stream. It appears we are meeting the Management Area Objectives and Desired Conditions within this recreation-river corridor. Some minor sedimentation was noted at some of the road crossings and stream widening. The watershed was generally in good condition.

A 500-foot reach of Medano was sampled, which indicated the presence of Rio Grande sucker and Rio Grande cutthroat trout. More sampling was to take place.

Some followup work will be needed to ensure the Wilderness boundary signing is posted in the NW area within Section 12, as well as assessing the network of roads about 1/4 to 1/3 mile above the Sand Dunes boundary.

Wilderness

The Forest again managed the South San Juans, Weminuche, and Piedra areas as a single Management Area, and outlined Standards that would be monitored. The Wilderness Management Direction Decision Notice and FEIS for amending the Land and Resource Management Plans on the San Juan and Rio Grande National Forests were completed in the fall of FY 98. Implementation of the new Standards And Guidelines will take place in FY 99, as well as continuing the priority-moni-toring items. Monitoring indicated that most compartments were within the established monitoring standards; however, there were a few areas that exceeded the established standards. These areas will have to be addressed in the FY 99 monitoring effort.

Scenic Resources

Forest Constituent Surveys were conducted on several roads and trails throughout the San Juan - Rio Grande National Forests. These surveys are distributed as part of an ongoing process to help determine if visitors' expectations of roads, trails, and special areas are being met.

In the course of the Forest Planning process, all roads, trails, and special areas were assigned a Concern Level identifying their scenic importance. Constituent surveys were then distributed to determine if the public agrees or disagrees with the Concern Level associated with these areas. Surveys were conducted using a combination of on-site interviews with visitors and survey feedback. The survey information was qualitative, and responses contained positive feedback on the management of Scenic Resources in specific areas. Positive responses also verified the appropriate Concern Level assigned to the designated road or trail where the survey process was conducted.

The Medano Creek Road (Forest Development Road #235) was inspected as part of an interdisciplinary-team monitoring approach in July 1998. Surveys were conducted along FDR #235 and within dispersed-camping units in this motorized corridor. Seven surveys were distributed; one was returned and one was conducted as a face-to-face interview.

Interview Results

Results of Face-to-Face Interview

The male and female couple interviewed have visited about four times for the fishing in Medano Creek and for photography. They have enjoyed the "solitude and peacefulness" and have a high concern for scenery. They felt the Medano Road was rough in spots and needed some treatment. They felt that impacts on the Forest (fire, defoliation from bugs, timber harvesting) are okay in moderation.

Results of Mailed Survey

A male who visited this area while on his way to another destination indicated he had a high concern for scenery in the Sangre de Cristos/Sand Dunes National Monument area. His activities included overnight camping, viewing scenery, motorized and nonmotorized travel, fishing, and photography. He felt that recreation affects scenery on the Forest. He prefers to see a managed Forest, but with changes subordinate to the natural-appearing landscape character.

On-site inspections showed one area near the Forest boundary not meeting the Scenic Integrity Objectives (SIOs), due to a user-created road off the Medano Creek Road that crossed the Wilderness boundary. Most of the dispersed-camping units and the travel corridor meet the Scenic Integrity Objectives for the area. Also, positive feedback from constituent surveys indicated the Concern Level 1 designated for this area is appropriate.

On-site visits were conducted at the Hot Springs, Garner, and Major Creek Trailheads. Each of the trailheads had parking reconstruction within the last three years, with the Hot Springs

trailhead having the most recent reconstruction.

At the Hot Springs Trailhead some ground disturbance still exists, such as bare soil and lack of vegetation due to construction; however, this is expected to come into compliance with the SIO over the next two years as the site revegetates. On-site interviews with hunters indicated there is appropriate parking and turning space for large vehicles (such as horse trailers). Locations for entrance signs for the Hot Springs Trailhead were discussed and decided upon. Each of the trailheads met the SIOs.

Travel Management

Travel management on the Rio Grande portion of the San Juan - Rio Grande NFs is in its second year under the new Travel Management Policy. A Forest Service and Bureau of Land Management Interdisciplinary Team, comprising SO, Ranger District, and Area personnel; Forest Service specialists; law enforcement; and management met periodically throughout the year to discuss travel management issues such as:

1. environmental impacts,
2. kiosks and signage,
3. data gaps on the roads-inventory layer of GIS,
4. road and trail numbering and signing, and
5. public understanding and compliance as a result of the new travel management policies.

The Interdisciplinary Team produced Forest entrance signs and new travel management maps to promote increased understanding by the public of the new travel management policies, as outlined in the RGNF Revised Land and Resource Management Plan. Travel management signs were placed at the Forest's portal entrances, to notify Forest users of the travel regulations and where they applied. Travel management remains a big challenge, both in educating Forest users and in funding personnel to administer the program, especially during the hunting season. These signs and maps will be updated in fiscal year 1999.

The Forest is continuing its efforts to update Forest road inventories.

Field Observations

Signs and maps have helped the public understand the new travel management policies. Observations by the Forest Law Enforcement Officers (LEOs) indicate there is an increased awareness of current regulations concerning travel management. For 1998, travel management violations have increased from previous years. This may be due to increased reporting from the Forest LEOs, Colorado Division of Wildlife's new management strategies during hunting season, and public awareness of the new Travel Management Policy. Travel management will be monitored closely on the ground and reevaluated in the next fiscal year by the Interdisciplinary Travel Management Team.

Continuous efforts have been made to sign roads and trails on the ground, but because of budget constraints, there are many roads and trails that are not labeled. There are currently roads and trails that need to be identified as open or closed with signing and road numbers. It is difficult to enforce travel management policies if proper signing is not available.

Wildlife

The Forest made good progress on conducting the variety of viability surveys identified in the Monitoring Plan. The effort was made possible by cooperative ventures with the Division Of Wildlife and the Colorado Bird Observatory. Biologists were able find two new bat roosts (just off the Forest boundary); document the existence of black swifts during the breeding season in an area with suitable breeding habitat (Chama Basin), which suggests there is indeed breeding activity taking place (though not confirmed); determined that six young peregrine falcons were fledged; surveyed 67 high-probability sites for boreal toads; and demonstrated that many spruce-fir birds could be monitored effectively with a moderate number of point counts.

The evaluation of Goals, Objectives, Standards and Guidelines, and Management Area Prescriptions is somewhat limited, since the Plan is so new, there are not that many projects that have been implemented which have incorporated the Plan's direction. Forest staff did review three projects and found them to be in compliance with the Plan.

No information suggests a need to make any changes in the Plan's Wildlife direction.

Infrastructure

Evaluations are ongoing. There is nothing new to report this year.

Health and Safety

Evaluations are ongoing. There is nothing new to report this year.

Research and Information Needs

No report available.

State of the Region Evaluation Report

The Rio Grande NF has made a commitment to local communities to provide a wide range of uses on this Forest. During the planning process, there was extensive

public involvement to build trust with local communities and encourage the public to take part in the management of its lands. The public expects us to provide responsible management of the resources and wants to be actively involved in public-lands decisions. The implementation of Forest Plan Standards and Guidelines and the Annual Monitoring Plan is a contract that lets the public know that we are living up to our end of the bargain.

The population of the San Luis Valley (SLV) is growing as the population of Colorado continues to increase. As a result there are increased demands on SLV resources. Growth in housing and commercial industry in the SLV has created new challenges in natural-resource management as there is increased private involvement with public-land agencies.

The most recent population figure from the Colorado State Demographer (Colorado Division of Local Governments, 1998) indicates that Colorado's population in July 1997 was 3,935,332. By the year 2000, the population is expected to grow at an annual rate of 2.1% to 4,175,000, and then decrease to 1.3% annual growth in the years 2000-2005.

The San Luis Valley's population estimate in July 1997 was 45,711, a 1.6% increase from July 1996. The San Luis Valley projects 1.7% annual growth until the year 2000, then a 1.3% annual growth from the years 2000 to 2005. The San Luis Valley has grown less than surrounding Chaffee, Archuleta, and LaPlata Counties.

South Fork showed a dramatic increase, however, of 48% from July 1996 to July 1997. This could have been caused by an increase in land sales around South Fork, as land is being subdivided for residential housing.

Given these predictions and the increase in popularity of south-central and southwest Colorado, we anticipate more demands on the biological, physical, and cultural resources of the area. In recent years south-central and southwest Colorado's backcountry and Wilderness Areas have become increasingly popular. In an attempt to monitor the increased use in the Wilderness Areas of southern Colorado, Amendment #2 to the RGNF Land and Resource Management Plan will help to identify Wilderness conditions and help to develop Standards, Guidelines, and Indicators to help identify potential problems within these areas.

In addition, community groups have begun to benefit economically from the growing tourism industry in the SLV. An interpretive plan is being developed to guide development activities and protect special cultural and natural resources for the area. Local groups are also developing interpretive sites to showcase the area's special features.

Because of traditions within the SLV, the Rio Grande NF has made a commitment to continue historic uses of the natural resources, such as the gathering of firewood and other timber products. To apply adaptive-management techniques and provide these timber resources to the public, a decision was made in 1997 to harvest in the 3.3 area under the Twister Environmental Assessment. This was a salvage operation in an attempt to recover timber over a large area on the Forest and to take an active role in preventing the spread of insects and disease.

To implement the new Travel Management Policy, the Forest is using an interdisciplinary team that includes the BLM, to help dissolve administrative boundaries. Also, a more comprehensive approach has been taken to travel management for the protection of backcountry resources and better public understanding of travel within the SLV. Continuous efforts have been made to provide better signage and updated map information.

Reanalysis of several range allotments to meet Standards and Guidelines defined in the Revised RGNF Land and Resource Management Plan should help improve the balance of seral-stage classes. In addition, the Forest is taking an active role in the fight against noxious weeds, through the use of improved inventories and better control methods.

Road and trail maintenance has helped to prevent or reduce soil erosion and protect water quality and fisheries habitat.

Recently the Forest cooperated with the Colorado Division of Wildlife in the release of the lynx in the Wolf Creek area, in an attempt to reestablish this native species in its former habitat.

Continuous efforts have been made to offer recreational opportunities to all Forest users by providing better signage, improved accessibility, and updated information. The implementation of Scenic Resource Rehabilitation through the Handkerchief Mesa Analysis Area is helping improve the Scenic Resource conditions on the Forest.

Overall, the implementation of the new Forest Plan Standards and Guidelines has helped in project design for sustainable ecosystems. In recent years, however, diminished budgets have resulted in reducing the work force, thus slowing down project implementation and decreasing customer service.

Authors

Kelly Clum, Landscape Architect

William Dauer, Engineer

Les Dobson, Hydrologist

Dean Erhard, Ecologist

Theodore "Lary" Floyd,
Fire Management Officer

Sue Swift-Miller,
Fisheries Biologist

Christopher Ortiz,
Law Enforcement Officer

Gerald Poe, Range Conservationist

Ron Pugh, Forest Planner

John Rawinski, Soil Scientist

Vince Spero, Archeaologist

Greg Thompson,
Recreation Forester

References

Clum, Kelly M., San Juan - Rio Grande NFs Heritage Interpretive Plan. *Passports Through Time*. Clemson University. May 1998.

Colorado Division of Local Government, The Demography Section. July 1998. Table, Preliminary Population Projections of Colorado Counties and Regions, 1990-2020.

Cordell, H. Ken, Jeff Teasley, Greg Super, John C. Bergstrom, Barbara McDonald. November 1997. Outdoor recreation in the United States: Results from the National Survey on Recreation and the Environment. Rocky Mountain Region. USDA Forest Service and the Department of Agriculture and Applied Economics, University of Georgia, Athens, Ga.

Stump, John S., Director of Research and Planning, San Luis Valley Development Resources Group, Nonprofit Organization. March 1999.

United States Department of Agriculture. 1997. Rio Grande National Forest *Land and Resource Management Plan* Final Environmental Impact Statement, May.

United States Department of Agriculture. August 1, 1998. Wilderness Management Direction, Amendment #2. Decision Notice. Rio Grande National Forest Land and Resource Management Plan.

Monitoring: San Juan National Forest

Recreation and Travel Management

The San Juan National Forest has experienced a steady increase in recreation use in the past few years. While budgets have not kept up with the estimated funding needed for the recreation program, other sources, such as the Capital Investment Program, have helped.

The increased Capital Investment funding over a three-year period was used to improve some facilities and develop additional sites on the San Juan Skyway. Many other sites (primarily campgrounds) need rehabilitation. Campgrounds and other developed sites that are 25−30 years old and in need of rehabilitation are scheduled for reconstruction.

The Forest's capacity for meeting the needs of present and expected future developed-recreation users appears to be adequate, with the exception of a few areas. Changes, however, are occurring in the types of recreation users that are using developed recreation sites. An increase in use by recreation vehicles (RVs) and an older clientele are pointing to the need for different facilities to meet these changing conditions. Therefore, the emphasis is−and should remain−on improving existing sites, not on increasing capacity.

Maintenance of existing facilities continues to be hampered by funding far below the estimated need. The Forest has strived to overcome this shortfall by operating all developed campground facilities with concessionaire operations. This has been a positive program that appears to be cost effective. Changes in legislation that allow the Forest Service to collect and keep fees locally, coupled with new wage requirements for concessionaires' employees, may result in the Forest Service's reducing its reliance on campground concessions in the future.

We have embarked on a program to rent out some Forest Service cabins and lookouts, to take advantage of these historic structures and to offer a unique opportunity to the public. This program has proved to be highly popular.

Through partnerships and the San Juan Mountains Association, we have increased our capacity to provide interpretive programs and tours. The SJMA is conducting daily tours and an extensive field-seminar program at the Chimney Rock Archaeological Area during the summer.

Trail use, particularly day hiking and interpretive trails, is also seeing a large increase, along with off-road vehicle (ORV) use. Mountain-bike use has greatly increased on the Forest within the past five years, and is fast becoming one of the primary uses on many trails throughout the Forest. Trail reconstruction and construction have decreased over the past few years, due to a dramatic decrease in budget. Budget allocations are far short of the Forest Plan levels. Progress has been made by providing barrier-free trails at the Animas Overlook, Big Al, Chimney Rock, and other interpretive-site locations. New trailhead improvements are planned at Junction Creek and Lower Hermosa Creek.

Downhill skiing opportunities on the Forest continue to meet the existing demand. In 1990, the Forest Service issued a permit to construct an additional downhill development on the Forest, the East Fork Ski Area, near Pagosa Springs. In 1995 the Forest terminated the permit for this area due to lack of progress by the proponent in meeting the special-use-permit requirements for development of the area. Purgatory Ski Area is developing a revised master development plan that will guide development of this area over the next 5-10 years.

Dispersed recreation continues to increase on the Forest; driving for pleasure is the most popular activity. The San Juan Skyway is now designated an "All American Road," one of only six in the nation. The Skyway is being developed to offer interpretive and other recreational options along the route. A particular area of concern for dispersed-recreation managers is whether the distribution of backcountry use is well balanced.

As recreation use continues to increase, the number of applications for commercial-use (outfitter-guide) permits has also risen. The Forest had placed a moratorium on the issuance of new permits until an allocation analysis was completed in 1998 and a determination made on the need for additional commercial services. In 1998 a prospectus was issued for new outfitter-guide opportunities. Approximately 22 new permits were issued through this process.

Analysis of Need for Change

As part of the Forest Plan revision process, we formed a Travel And Recreation Working Group that began meeting in July 1997 to study recreation and travel management issues on the San Juan National Forest (SJNF).

In February 1998, the group began integrating recreation with travel planning; members anticipate finishing during spring 1999. The aim is to highlight the range of members' perspectives and recommendations to consider in developing alternatives.

The group identified three important questions:

- Is our future Desired Condition to accommodate more users? How can the SJNF better

accommodate the current amount of users?

- How can the forest minimize, direct, and contain user impacts?
- What experiences are desired by different Forest users? In other words, considering both the resources and the types of activities, what preferred uses can be achieved?

Based on the issue discussions during the first two meetings, the following working-group Goal, Objectives, and Outcomes were derived.

Goal

Provide general management guidelines for minimizing resource impacts and offering quality recreation opportunities and adequate access for all users.

Objectives

- Provide natural-resource protection when planning and managing travel and recreation on the SJNF.
- Address people management, considering the experience desired by different user groups, resource impacts, and wildlife habitat.
- Address motorized-recreation and travel planning.
- Provide direction for minimizing and containing user impacts.
- Consider wildlife habitat with regard to recreation and travel access, especially winter recreation effects on winter range.

Outcomes

Mapping

Recreation User-Group Map

In the fall of 1997, working-group members, as well as other local residents who belong to specific user groups, met for special mapping meetings to mark trails, roads, and areas of particular interest. They also recorded areas of conflict and destination points, and provided other related information.

Each map was then compiled into winter and summer travel-inventory maps. The summer travel map was overlaid on existing SJNF roads, trails, and ROS areas. Separate transparent overlays were used for motorized and nonmotorized modes of recreation.

The maps' purpose is to compare current and desired recreation routes with the current ROS and travel management direction. It identifies travel and recreation activity from a user's perspective, as well as desired use, trail improvements, and loop opportunities. Specifically, the map marks trails and roads that are:

- current and proposed bicycle routes,
- current horse routes,
- current and proposed ATV routes,
- current and proposed motorcycle routes,
- current and proposed 4X4 routes,
- preferred nonmotorized trails (bicycles okay), and
- preferred nonmotorized and nonmechanized trails.

Although there were a few areas of overlapping use and desired changes, the maps show that, overall, current travel and recreation management is working fairly well; diverse users are either separating themselves or sharing the trail with few conflicts. Members often have emphasized multiple use and cooperation among recreation users. Some commented that, given the large number of users and range of current opportunities, conflicts are minimal. There simply is not enough Forest to separate uses, they assert.

Multiple use may be OK in the sense of shared access among current users. However, caution was expressed about the multiple-use philosophy that leads to the belief that all uses can be satisfied. Future recreation planning needs to acknowledge the point when the land cannot accommodate more uses.

Map of Management Concerns

For two meetings in February and March of this year, SJNF Ranger District specialists brought a map showing suggested changes in travel management classifications for about 25 areas. They based their considerations on their field observations and asked working-group members to give their impressions of the suggested changes. They stressed that the proposals are not official, but are ideas for changes that managers wanted to discuss.

Proposals included changing to nonmotorized a few motorized trails where the physical terrain is difficult and little used. Many opportunities for linking old roads and upgrading trails to provide motorized trail loops were also identified.

Discussion of these two issues also led to much discussion about the SJNF travel policy. The Mancos-Dolores RD uses the "Open Unless Designated Closed" policy. In contrast, the

Columbine and Pagosa RDs' policy is "Closed Unless Designated Open," which implies restricting access to designated roads and trails, prohibiting off-road and off-trail use. Given the high density of roads on the Mancos-Dolores RD, combined with resource-protection issues, members generally accepted making the policy for the entire Forest "Closed Unless Open."

Area-Specific Recommendations

In addition to responding to area-specific management concerns, members have made recommendations for other areas throughout the course of their regular meetings–particularly in relation to a desired Recreation Opportunity Spectrum for any given area. As of this writing, these area-specific comments are being compiled for final review by the working group as it continues its study process. They are not included here.

Themes And Strategies

The group's course of study reverberated with repeated calls for three values that must be sustained through planning and management: resource protection, multiple-use philosophy, and adequate access and travel opportunities that offer a full range of recreation experiences. The following are some strategies members suggested for achieving these keystone themes:

- Emphasize a multiple-use recreation-and-travel plan by encouraging responsible use and working out user conflicts, rather than imposing restrictions or segregating uses.
- Protect opportunities for solitude and more natural recreation experiences by designating some areas for nonmotorized-recreation activities–for example, cross-country skiing and hiking.
- Use the "Closed Unless Open" area and road policy across the SJNF to better protect the resource, especially given the current need for user education. A benefit would be a positive message in signage, e.g., "open to..." rather than "closed to..." (Disagreement exists over this theme, and discussion will continue as community members and the FS continue to develop a solution.)
- Manage primitive areas in large blocks, to:
  - protect and retain biological diversity;
  - reduce fragmentation, especially between high and low elevations; and
  - preserve a natural environment and refuge for animals and humans.
- Develop facilities along key points of the San Juan Skyway, to accommodate user needs and provide interpretive and general Forest information.
- Concentrate use and development along highways and urban corridors, to reduce resource impacts and protect other areas. Receiving special mention were:
  - protect wildlife habitat and corridors from fragmentation, and
  - preserve the natural character and solitude of other areas, especially backcountry.
- Minimize resource impacts from motorized-recreation use, by:
  - providing adequate motorized access and opportunities, restricted to designated roads and trails;
  - designating roads and trails in the current F (open) areas; and
  - developing ATV loop trails, to reduce off-trail violations, reduce environmental mischief, and spread the flow of traffic on the few existing motorized trails.
- Minimize wildlife disturbances and habitat impacts caused by travel and recreation, by:
  - restricting recreation access in low-elevation winter-range habitat,
  - concentrating uses, and
  - managing recreation access seasonally, depending on periods of wildlife use.
- Minimize hunting-season impacts, by:
  - making the SJNF Visitor Map and travel regulations more understandable,
  - posting better ground signs,
  - supporting registration programs that provide a contact point for educating users and funneling them into appropriate areas,
  - including more information in Colorado Division of Wildlife (DOW) pamphlets,
  - increasing FS personnel presence,
  - using more volunteers,
  - collaborating with DOW on enforcement,

- generating revenue to fix the heavy-impact problems; and
- implementing a state conservation stamp to pay for monitoring and improving habitat.

- Establish partnerships with Forest users and community organizations, to:
  - provide voluntary maintenance and monitoring,
  - increase public contact and access to Forest Service information, and
  - create informational maps specific to each recreation activity or travel mode.

New Planning Approaches and Directions

As they progressed in discussions and learning, members identified new approaches and management opportunities for improving recreation and travel planning. Some of the following recommendations are fairly new planning directions for the SJNF, and could result in significant changes in use.

- Create a Nonmechanical And Nonmotorized Trail designation, to provide solitude and natural recreation experiences outside designated Wilderness, especially more accessible lower-elevation opportunities.
- Establish guidelines and a review process for new travel modes, before allowing them access.
- Distinguish between motorized modes of travel when designating trail access.
- Include management flexibility in the Plan, in order to address future conflicts and allow seasonal management, because uses and needs change year to year.
- Encourage joint recreation and travel planning with the BLM in the Silverton area.
- Monitor both social and physical impacts in recreation and travel planning (approval of the Capacity Analysis).

Future Opportunities

The recent integration of recreation-user maps with the FS ROS areas, roads, and trails has produced a number of issues for the group to address further. Below are listed some of the possible tasks still to be examined by the group.

- Develop a winter ROS map.
- Review the wildlife group's maps and recommendations, to better plan recreation access with regard to wildlife habitat.
- Continue to integrate summer and winter recreation desires with travel planning.
- Discuss the potential for establishing a consistent travel policy across the Forest, and possibly designate specific roads and trails for access routes within F areas on the Dolores RD.
- Integrate previous study-group concerns with the continuing travel management study.
- Work with the USFS to create a Desired Future ROS map. The ROS map being used now illustrates "current ROS distribution."
- Design a new visitor information map.

Travel Management Planning Status

The activities listed above will contribute to a travel management plan with which the Forest proposes to amend the current Forest Plan. A goal for the new travel management plan is to be consistent across the Forest and address known problems with the current Plan. The SJNF expects to develop alternatives by October 1998.

Wilderness

Evaluation of Plan Implementation

The SJNF manages close to 20% of its land area as designated Wilderness. An additional 59,840 acres was designated Wilderness with the 1993 Colorado Wilderness Act. The Act also designated 62,550 acres as the Piedra Area, which is to be managed to maintain its existing Wilderness character and potential for inclusion in the National Wilderness Preservation System.

In 1998, the Forest amended its current Forest Plan direction for Wilderness and included new Standards and Guidelines, Management Area Prescriptions, and allocation of Management Areas. This new direction will be implemented starting in the summer of 1999.

The new direction will make it easier to monitor effects on Wilderness conditions, allow for new regulations to protect Wilderness values, and establish group-size limits that are consistent across the Forest.

The Forest staff has completed land acquisition of over 600 acres in the Wilderness. This accomplishment will allow for consistent management for Wilderness values, by reducing the potential for evidence of human activities and development within the Wilderness boundaries.

Over the last two years, we have begun to gather information on recreation use, including commercial and institutional as well as general-public use; visitor demographics; trip diaries to model

visitor movements within the Wilderness; and surveys of visitor concerns and experience factors.

Information gathered so far indicates a trend toward increased use of the Wilderness resource, with associated effects on social and physical/biological values of Wilderness.

Analysis of Need for Change

Goals and Objectives

The Wilderness Forest Plan amemdment primarily addressed recreational impacts on Wilderness conditions. The Forest will need to look at needed changes for other Wilderness resources, such as air and water quality and wildlife habitat.

Standards and Guidelines

The Region is currently working on adopting Regionwide Standards and Guidelines for Wilderness. Where feasible, these can be incorporated into the existing Standards And Guidelines that were recently developed for the San Juan and Rio Grande NFs.

Indicators and Standards should be reviewed for a variety of resources within Wilderness. These include air quality Standards; water quality Indicators for high lakes and effects from mining operations; recreational-stock grazing-utilization Standards; wildlife habitat indicators−particularly for black bear, mountain goat, and indicator species such as boreal toad; noxious-weed and non-native-plant Iindicators and Standards; riparian-area Guidelines; and direction on management of National Register-eligible properties (historic surface architecture, in particular).

Management Area Prescriptions

Management areas for the Lizard Head Wilderness should be evaluated within the context of planning on the Grand Mesa-Uncompahgre-Gunnison NF Plan revision.

Monitoring and Evaluation System

Monitoring for the recently amended Standards And Guidelines should be implemented starting in FY 99.

Wildlife

Evaluation of Plan Implementation

Management Area 5B

Management Prescriptions 12-13.5 for 5B (Big-Game Winter Range) areas have been applied as directed in the Forest Plan. The direction for this Prescription Area is used effectively in project planning. There is some concern about the capability to monitor the Standards for "30% of the area in created openings," and maintaining the Standards for cover across the Prescription Area. This may be facilitated once GIS is available, but is difficult to do currently over a large area.

We also have not been able to evaluate the Standards for maintaining a certain percentage of habitat effectiveness and habitat capability. In addition, we are not tracking populations of big game to know whether we are contributing to meeting DOW population objectives. In most cases, the National Forest land within the DOW population units (i.e., Data Analysis Units) is relatively small. As such, tracking population data, other than to look at relative trends, may not be meaningful.

Another concern about the big-game winter range area is that it does not correspond to the DOW's delineation of significant or "critical" big-game winter habitat. Also, due to the unpredictable winters in southwest Colorado, there has been interest in delineating a "transition" range; i.e., areas significant to elk and deer in milder winters. The increased impacts from rural development adjacent to the Forest will further heighten the significance of big-game winter range on the National Forest.

In general, natural succession is occurring in much of the big-game winter range, resulting in type conversions that affect the habitat. This is primarily a result of fire suppression. For example, the piñon-juniper type is encroaching on the sagebrush-grassland type, which is important deer habitat. This may hamper our ability to meet certain habitat Goals without increased emphasis on habitat improvement projects (e.g., prescribed fire).

Over the past three years, funding for big-game habitat improvement activities accomplished cooperatively with the DOW has declined. This is primarily due to the DOW's emphasis on accomplishing projects identified through their Habitat Partnership Program. This major planning effort includes all ownerships, and thus has spread DOW's funding across a larger land base. The HPP effort has been ongoing in the counties on the east side of the Forest and should begin in the western counties in 1996.

Accomplishment of big-game habitat improvement projects on the Forest has varied, due to weather that limited opportunities to burn. The spring and fall of 1993 were wet, which precluded extensive burning. In 1994, conditions were dry, but most personnel were involved in wildfire suppression and unavailable for prescribed fires.

With regard to road closures, we are unable to effectively manage and monitor many that are established. This is particularly true in winter range where flat topography limits our ability to use gates effectively. At present, we have not been able to fully evaluate the effectiveness of these projects.

Management Area 4B

Management Prescriptions for 4B (Management Indicator Species [MIS]) are not being applied consistently across the Forest. Much of the problem is due to the fact that specific MIS species were not identified to the Prescription Area. We may want to rethink the utility of a Prescription of this type and consider switching to a management system that more generally provides for habitat needs.

Threatened and Endangered Species

With increased emphasis on T&E species Regionwide and the issuance of a Regional Sensitive Species list in 1993, the TES administration workload has increased dramatically. In particular, inventories to ascertain whether these species are present or whether there is suitable habitat have been emphasized. While many of the inventories have been negative, a significant find occurred in 1995, with the sighting of southwest willow flycatchers in two locations on the Forest. Additional inventory should be emphasized.

Watchable Wildlife

The Forest Service has instituted a program to provide opportunities to enhance the public's enjoyment of wildlife watching. Emphasis has been placed on interpretive signs, trails, and brochures. We expect that this program will increase in the future because of the excellent public service it offers. The Watchable Wildlife program, however, was not included in the direction or anticipated costs of the 1983 Forest Plan.

Environmental Education

The public demand for environmental education has increased dramatically in recent years. While most of the emphasis has been in reaching school children, other adult- and family-centered programs have been implemented. The San Juan Mountains Association has been an integral part of this education effort. One Ranger District last year accomplished 76 environmental-education programs on wildlife, reaching approximately 2,750 people. As with the Watchable Wildlife program, environmental education was not included in Forest direction, has no accomplishment reporting or budget associated with it, and is not reflected in the 1983 Forest Plan.

Analysis of Need for Change

Goals and Objectives

We need to consider increasing emphasis on funding inventory and protection of Threatened, Endangered, and Sensitive species.

We should consider direction that adds a program focus on providing interpretive information to the public.

A current Forest Plan Goal is to "improve habitat diversity on 4 of the Forest" (Chapter III-3). This Goal needs to be reevaluated and a determination made on how to measure and/or monitor it.

We should examine landscape-level biodiversity Goals and/or management requirements to address current issues. This might include Goals and/or Standards for fragmentation, corridors, keystone species, natural disturbance events, desired vegetation composition and structural diversity, wetlands, unique habitat areas, etc.

In general, natural succession is occurring in much of the big-game winter range, resulting in type conversions that affect the habitat. This is primarily a result of fire suppression. For example, the piñon-juniper type is encroaching on the sagebrush-grassland type, which is important deer habitat. This may hamper our ability to meet certain habitat Goals without increased emphasis on habitat improvement projects (e.g., prescribed fire).

Our big-game program should be an integral part of the Habitat Partnership Program implemented by DOW. We should take this opportunity to establish coordinated Goals and Objectives for big-game habitat and populations.

Prescribed natural fire will be more integral to our management. We need to establish Objectives for this program.

Standards and Guidelines

Wildlife and Fisheries direction should be integrated more thoroughly with Watershed, Riparian, and Recreation.

The Forest Plan should include Management Direction for the inventory and protection of habitat for Threatened, Endangered, and Sensitive plant and wildlife species. This would include evaluating land acquisitions, Standards for protecting each species, and ongoing monitoring. The anticipated costs of this work need to be reflected in the Planning budget.

Neotropical Migratory Birds has surfaced as a major issue. Standards for managing and monitoring habitat for these species should be pursued.

Many of the Standards and Guidelines for individual species need to be revised. For example, the goshawk Standards are inadequate to protect a nesting goshawk, according to the latest scientific literature. In addition, the Abert squirrel, road density, and wildlife-tree (snag) Standards are not effective.

Riparian-habitat Prescriptions are inadequate for the protection of riparian-dependent species. These Standards need to be re-evaluated.

There continues to be conflict over allocating forage between big game and livestock. It is virtually impossible to separate utilization between the two.

The introduction and/or reintroduction of both native and non-native species needs to be addressed.

Management Area Prescriptions

The necessity of Prescription Area 4B (Management Indicator Species, MIS) is in question. Management Prescriptions for 4B are not being applied consistently across the Forest. Specific MIS species were not identified for the Prescription Area; the Management Indicator Species concept is not supported by most wildlife professionals. A landscape-level approach (section level) for managing vegetation, based on conservation biology principles, could be pursued.

The 5B (Big-Game Winter Range) Prescription Area does not correspond to the DOW's delineation of significant or "critical" big-game winter habitat. Also, due to the unpredictable winters in southwest Colorado, there has been interest in delineating a "transition" range; i.e., areas significant to elk and deer in milder winters and/or a bull elk winter range.

Monitoring and Evaluation System

There is some concern about the capability to monitor the Standards for "30% of the area in created openings," and maintaining the Standards for cover across the Prescription Area. This may be facilitated once GIS is available, but is difficult to do over a large area. We also have not been able to evaluate the Standards for maintaining a certain percentage of habitat effectiveness and habitat capability. In most cases, the National Forest land within the DOW population units (i.e. Data Analysis Units) is relatively small. As such, tracking population data, other than to look at relative trends, may not be meaningful.

With regard to road closures, we are unable to effectively manage and monitor many that are established. This is particularly true in winter range where flat topography limits our ability to use gates effectively. At present, we have not been able to fully evaluate the effectiveness of these projects.

Neotropical Migratory Birds has surfaced as a major issue. Standards for managing and monitoring habitat for these species should be pursued.

Other Issues and Concerns

There is a potential issue with maintenance of the aspen type. Much of it is mature. However, there are some publics concerned about harvesting stands of mature, contiguous aspen, due to the potential resulting fragmentation, and the effect it may have on species such as goshawk. A landscape-level approach to aspen management should be pursued.

The increased impacts from rural development adjacent to the Forest will further heighten the significance of managing big-game winter range on the National Forest.

The introduction and/or reintroduction of both native and non-native species needs to be addressed.

The Forest has completed an analysis to determine the impacts and environmental consequences of government-sponsored predator control (the APHIS program). A decision was made in March 1992 to allow the predator-control program to continue, with some restrictions. It does not appear that further Forest Plan amendment will be necessary.

Fisheries

Evaluation of Plan Implementation

Emphasis areas for 1998 included implementation of the Colorado River cutthroat trout conservation strategy, abandoned-mine-land reclamation, settlement of federal reserved water rights, and effectiveness monitoring of structural improvements. Other activities included NEPA support functions, biological assessments for water depletions, Regional Office tasks, and interagency coordination.

Program priorities have been clearly articulated and are being pursued within budgetary and personnel constraints.

Monitoring Activities

Implementation and effectiveness monitoring was completed for all structural improvements. A database was developed with the intent of identifying and tracking structural-maintenance needs. District Biologists are using this information to develop project work plans for FY 99.

Validation and effectiveness monitoring was continued for purposes of abandoned-mine-land reclamation. A monitoring report is being developed that will help target remediation efforts.

Analysis of Need for Change

Goals and Objectives

The Forest Plan provides little direction for fisheries. It includes a single Goal: to "improve fish habitat on suitable streams and low-elevation ponds and lakes." The Plan defines Objectives in terms of recreation visitor days, with projections ranging from 135,000-255,000 RVDs/yr. Under General Direction within the Management Direction section, the Plan reiterates NFMA requirements for maintaining viable populations.

In addition, the current Regional Goals and Objectives for Plan revisions contain little in the way of fisheries direction, and the Regional Watershed Conservation Practices Handbook only generally addresses the biological components of aquatic management.

The Plan Revision should contain Goals and Objectives that address

aquatic-habitat maintenance and improvement, population viability, aquatic-TES management, aquatic biodiversity, riparian–fisheries interaction, user opportunities, etc. Emphasis needs to be placed on a more holistic approach to aquatic-ecosystem management.

Other Issues and Concerns

Significant issues that may need to be addressed in the Plan Revision include:

- TES management.
- Wilderness stocking.
- Wild fish management.
- Whirling disease.
- Water quantity issues.
- Water quality issues.
- User-group conflicts.
- Fishing outfitter-guide allocations and distribution.
- Aquatic biodiversity.

Range

Evaluation of Plan Implementation

Of the 881,000 acres of Suitable rangelands, about 61,000 acres has been classified as "Low Ecological Condition." Low ecological range is generally found in areas where vegetation-production potential is minimal (for example, steep, rocky, or exposed soils such as Mancos shale-derived slopes).

There are 136 grazing allotments on the Forest. Of these, 111 are cattle, 23 sheep, and two recreation livestock allotment. Thirteen of these allotments are vacant. Districts have consolidated some allotments through the allotment-planning process. This has resulted in fewer grazing allotments, which has improved the efficiency of administering permits and increased the number of allotment management plans that are in compliance with the Forest Plan.

The 1995 Rescission Act (PL 104-19) was signed into law on July 27, 1995. Section 504 of this law requires that National Forests establish and adhere to a schedule for the completion of National Environmental Policy Act analysis and decisions on all allotments within the National Forest System unit for which NEPA analysis is needed. The San Juan - Rio Grande National Forests have developed this schedule, and will follow it in our short- and long-range-planning process.

Since 1993, we have completed 29 additional allotment management plans, bringing the total to 104 allotments that are verified as operating in full compliance with the Forest Plan.

Both the sheep and cattle industries are experiencing a depressed market. The sheep market continues on what has been several years of low market prices for mutton. In addition, federal government wool incentives have been eliminated, making it more difficult for permittees dependent on their income from sheep to remain solvent. A drop in the prices cattle producers are receiving at the sale barn has continued for over a year and is undoubtedly having an effect on Forest permittees. No significant change or effect on the Forest range program has been noted as a result of these economic factors.

Although Management Prescriptions are being applied in making land management decisions, we continue to have trouble applying the 9A (Riparian) and 4B (Wildlife) Prescriptions consistently. One reason may be that more specific direction on utilization levels and other measurement factors is needed to better determine when desired levels of use are being reached.

In an attempt to fill this need for more specific direction and guidance in riparian-area and upland-site management, the Forest is seeking to develop clear, measurable, and acceptable Standards. Our goal is to develop a guide or package that will clarify and simplify the existing utilization Standards so that permittees, the general public, and Forest specialists can all easily recognize prescribed-use levels.

Analysis of Need for Change

Goals and Objectives

The two Goal statements listed under Range are unrealistic and create expectations from some of our users, namely grazing permittees, that we may not be able to meet. The statement, "Provide for grazing of livestock at moderately increased levels" implies that we will increase permitted-livestock numbers on the Forest. The fact is that since the implementation of the Plan, we have experienced a decrease in total permitted numbers, due in part to the depression in the sheep market.

This statement could be viewed as leading the permittees and industry on, and giving them false hope of raising their permit numbers. The basis for this statement does not exist. We would need site-specific information to determine if the possibility of increasing permitted numbers exists. Since the Forest Plan is intended to be a broad-level planning step, the issue of permitted numbers and changes of them should not be a product.

The Goal is too narrowly focused to gain support outside the minority directly benefitting from this activity. To gain wider support, we need to have a Goal that talks more to the ecological health of the rangeland resources and focuses on the management of those resources, rather than on the benefactor or user of those resources. By doing this, we begin to show that we are managing

with an ecosystem concept, rather than managing for livestock.

The second Goal statement of "Providing for intensive livestock management on approximately 60 percent of the Forest" may be difficult to accomplish on some Districts, such as Pagosa, due to the large amount of designated Wilderness. Although the AMPs and Annual Operating Instructions incorporated details of how grazing will occur within these areas, the limitation of what can be done to remain in compliance with the law makes it difficult to develop an intensive-management system for livestock grazing.

Perhaps a clear definition of the term "intensive management" is needed to distinguish level of intensity. Is it necessary to attach an expected level of accomplishment (60%), and if so, how was 60% arrived at? A clear statement defining "intensive," and describing what is acceptable and what is not, would be more appropriate.

The specific objective of grazing use displayed in Table III-1, Projected Average Annual Outputs, Expenditures, Costs, and Returns, is unrealistic and not supported by sound resource-inventory data. The table indicates that the permitted Animal Unit Months (AUM) level will increase by 38,000 AUM between the years 1985 and 2030. If we use a four-month grazing season, this equates to an approximate increase of 9,500 animal units. That is substantial, considering the issues and reasons discussed earlier.

Also in regard to Table III-1 and the concern of AUM level displayed, if this is an output measure rather then an availability measure, then it needs to be made clear that this is not intended stocking or permitted numbers. In other words, distinguish between available and permitted or intended stocking. In some cases, we may have AUMs that no one has interest in using.

As mentioned in previous comments, the usefulness of the Goal and Directives can be improved by incorporating a sense of ecosystem or rangeland health, while maintaining grazing as an available use of the Forest resource. If a projection of AUM levels is mandatory over the life of the revised plan, then let's try to agree on a defensible basis for making the projection, i.e., current level with anticipated changes as per 15 AMP Schedule. Another possibility is to offer the AUMs that are not currently permitted but that can be used on allotments where we intend to continue to graze, if a qualified applicant exists.

The Plan Goal of increasing grazing is no longer valid. The Goal of intensive livestock management on 60% of the Forest may not be valid.

Many sheep allotments are vacant and not suitable for conversion to cattle.

Rest-rotation systems were designed for several allotments in the Mancos area, but were not fully implemented for a variety of reasons. Less intensive management strategies may be more appropriate for many areas of the Forest, due to terrain, the amount of forage available or reasonably available, and the current infrastructure.

The Goals should be expressed in terms of desired pattern of vegetation or ecological condition and community sustainability. Livestock grazing would be one means to achieve these Desired Conditions, and not an end in itself. Goals should be developed for upland and riparian areas.

Standards and Guidelines

We need to develop clear, understandable utilization guides for riparian and upland sites. This may require listing allowable use by species and for specific rotation systems.

We also need to consider eliminating certain grazing practices or philosophy, such as season-long or continuous-grazing systems. This type of practice may not qualify as intensive management.

General Direction states, "Remove livestock for the remainder of the grazing season from allotments managed under a continuous-grazing system when further utilization of key areas will exceed allowable-use criteria for the season." This direction should apply regardless of the grazing system in place. Do not identify continuous-grazing systems as the only ones where this is applied.

Again with regard to continuous-grazing systems, we need to look closely at whether they should be used at all. In the opinion of some of the Forest Range Cons, continuous grazing is a contradiction of intensive-grazing management. If considered an acceptable system, then clearly define how this system in intended to work. It may be a usable or desired system in special-uses pastures, but may not be used as a feasible strategy in grazing allotments where more intensive management is needed or desired−and certainly not on 4B, 5B, and 6B Rx areas. Also, distinguish the difference between continuous-grazing systems and season-long grazing systems, if there is one.

Under General Direction for Range Resource Management−Standards and Guidelines a. 1. a., under Rest Rotation System, it talks about allow 50-60% on heavy-use pastures and up to 45% on light-use pastures. This statement is confusing, since it is not clear what is meant by "heavy-use" and "light-use" pastures. We need to clarify intent.

S&Gs a. 1. a. , maximum allowable use on Bluegrass of 80% is too high. Use at this level will not allow for improvement on that site. Where we want to move to a higher seral stage, grazing Bluegrass sites at this intensity will not get us there. For other plant

associations, it would be helpful to have the Plan describe allowable use level by plant association, if we have sound data/research to support us.

Incorporate into the S&Gs our Riparian Standards clearly defined. Also with regard to Riparian Standards, keep in mind in crafting new riparian Standards and Guidelines that it may not be desirable to manage all riparian areas to achieve high seral stage. Allow the Rx area description and the specific AMP analysis and mitigation measures to determine the seral stage desired, based on the Rx activity. To clarify, we cannot expect to manage all riparian areas in or for a high seral stage, and also graze livestock in that same area. One is exclusive of the other. We can manage for healthy riparian areas that are not in high seral stage, and also have managed livestock grazing.

Not sure if this is applicable within the FLRMP or more in the area of implementation and monitoring; allowable-use levels developed will be applied regardless of type of resource use. For example, allowable use for a given Rx will apply to permitted-livestock grazing as well as recreational-livestock grazing. We have areas on the Forest where heavy recreational-livestock use occurs with no apparent regard for the proper grazing use or level. Must strive to be consistent regardless of activity.

Generally, the S&Gs are effective in meeting their intended resource management/protection purpose. However, there are opportunities to improve and clarify by being more specific. By being more specific at this level of how we will do things, we will be more successful at the site-specific level of analysis (AMP), making effective changes where needed. Cases where they are not effective, such with bluegrass mentioned above, modifications have been made when developing mitigation measures at the AMP level.

Many of the current Standards and Guidelines are not measurable, either qualitatively or quantitatively.

Some, like the Water Quality Standards one, do not really help guide or evaluate our actions.

Others, like Managing All Riparian Ecosystems in At Least Upper Mid-Seral Stage, do not fit with any concept of dynamic systems.

Although there is a Guideline that references ground-cover Standards, we had little to help us interpret our estimates: Is 50% OK, is 30% too little, and, if so, under what circumstances?

How to interpret an assortment of compliance and not? Are some Standards and Guidelines more critical/important than others? And, if so, whose prejudices win out?

Utilization Standards should focus on desired plant communities and less on bluegrass.

Direction in some Prescriptions to use extensive, season-long grazing systems is contrary to good livestock management practices, and is almost impossible given the utilization Standards in the Plan.

Develop Standards focusing on desired plant communities and attainable goals, instead of range condition and trend.

We need to be able to manage for a variety of seral stages. Need to develop utilization Standards for desired plant communities and/or individual species that are easily used by a variety of users.

Develop tangible/measurable/evaluatable Standards and Guidelines.

Need to move Goal statements out of the Standards and Guidelines and develop measurable Standards and Guidelines that can be used to develop management requirements and mitigation measures, and to measure our success in management.

Need to develop sets of Standards and Guidelines and management requirements and mitigation measures that can be used by permittees for self-monitoring.

Management Area Prescriptions

Consider clarity in language when describing allowable-use Standards similar to what is used in the 8A Rx - Wilderness Area Management.

To some degree there is a conflict between the Goal of managing range resources in an intensive-management system and Rx 3A-semiprimitive nonmotorized recreation in roaded or unroaded areas. Also some conflicts in managing timber in 6B areas. The limitations imposed in the general direction and S&Gs in this Rx have an effect on how intensively allotments can be managed.

Forestwide, 90% of the time on-the-ground management is occurring, according to the Rx allocation. In the cases where it is not, it is due to reasons such as erratic permittee management or acts of God, such as drought, requiring a change.

Given that the original Goals are not longer realistic and that much of the Forest, including areas that are not 6B, is in allotments and grazed, there should be a better way to blend commodity and non-commodity uses. The focus should be more on vegetative pattern, a variety of seral stages, and desired plant communities; then livestock management and timber harvest plus prescribed fire would be means, rather than ends. Goals and Objectives would be a mosaic of vegetation, and outputs would be tracked separately.

Timber harvest activities do not always benefit livestock management in 6B areas.

In some areas, 6B has been assigned to Unsuitable range.

Standards for big-game winter range could be more flexible, depending on when livestock are using a specific unit.

Consider whether we will still need utilization Standards by prescription, if the focus is shifted to desired plant communities.

If Management Area Prescriptions are to be assigned to specific areas, "ground-truth" to ensure that livestock grazing is not assigned to Unsuitable areas and/or areas with little to no forage production.

Monitoring and Evaluation System

While tracking of outputs is appropriate, monitoring should also include some measures of our relative achievement of Desired Conditions.

Outputs (animal months) is the only monitoring requirement in the Forest Plan and is tracked via Management Attainment Reports. Some measure of output or financial return is appropriate (animal months grazed, number of active allotments, dollars paid in grazing fees, etc.).

Projected outputs may need to distinguish between cattle and sheep.

In addition to tracking outputs, we should monitor/track acres meeting specific plant condition/community Goals.

Other Issues and Concerns

Objectives for grazing use (AUMs) need to be more realistic, in light of issues that have an effect on determining grazing use, such as continuing budget reductions, difficulty in implementing "the law" due to opposing interpretations, need for extensive supporting data to avoid or prevail in litigation or appeal cases, and changing social needs and expectations.

Effects of aspen harvest on livestock forage production and maintenance of allotment capacity.

Timber harvest in 6B areas that adversely affect livestock management. How to offset loss of forage in 7E areas following timber harvest.

Several questions have been raised about range direction in the existing Plan. The first is what type of Standard are we to use in writing and monitoring the effectiveness of allotment management plans? As our analysis has changed from traditional range condition and trend to an ecologically based approach, how do we describe the management goal for an area, and how do we measure our success in achieving that goal?

The second question is related to the effect of grazing on riparian areas. Are current Riparian Standards and Guidelines adequate to protect the resource? This is listed under Range because that is where the question is frequently raised; however, this is an issue that applies to all riparian uses, and will overlap particularly recreation and wildlife.

Timber

Analysis of Need for Change

As we transition to Forest Plan revision, we will need to build on our timber trend information to account for significant timber program changes over the past four years. Areas of greatest program change have included (1) the reduction in budget and timber supply from that projected by the 1992 amended Forest Plan; (2) increased stumpage prices and increased administrative costs; (3) changes in industry infrastructure, particularly in the Pagosa Springs area as a result of Lance Industries' closure; and (4) changes in the types, size, and location of tree species offered for sale since 1992.

Goals and Objectives

In general, the Goals and Objectives appear valid, though, if possible, they should be expressed in ecosystem-management terms. For example, vegetation management Goals (and resulting Objectives), should reflect broad-scale ecological needs and should be described in terms of the hierarchical system, established primarily at the Physiographic Zone, and area levels.

Projects like the Pine Zone Project and the baseline ecological research in the ponderosa pine type should help define our vegetative management Goals and Objectives for the major tree-cover types. The analysis that leads to Goal and Objective establishment should include a comparative analysis of reference and current conditions, and should describe significant deviations between the two, including suggested courses of action (Goals and Objectives) to remedy wholesale differences.

Standards and Guidelines

The range-of-natural-variability studies and examination of current vegetation condition suggest a significant shift in our approach to ponderosa pine and mixed-conifer cover-type management. Findings from the aspen study will be available during the revision. These studies suggest a significant shift in management direction and resulting Standards and Guidelines for these major cover types.

The Standards and Guidelines in the 1983 Forest Plan emphasized even-aged silviculture. The 1992 Amended Plan changed management emphasis to uneven-aged silviculture. The Standards and Guidelines would benefit from further direction regarding "q" values, reentry cycles, and max-tree-size Goals.

What constitutes an intermediate-cover landscape needs further

definition. The concepts of closed-canopy, open-canopy, and intermediate landscapes may be of limited value from the standpoint of developing timber project-specific silvicultural treatments.

Utilization Standards need to be revisited in light of changing vegetation management Goals. An example is that successful implementation of vegetation management Goals may require increased emphasis on thinning small-diameter materials.

Management Area Prescriptions

Region 2 has adapted a new set of Regional standard Prescriptions that are slightly different than the Prescriptions the San Juan NF used in 1983. We will have to adapt this new menu of Prescriptions, or some variant thereof, during Plan revision. As minimum, we may have to make some changes in the Management Area to fit the new system to the management intent of the existing Plan, especially in the case of the old 4b, since there is no longer a wildlife Rx.

Over the past 12 years of implementing the current Plan, we've had instances where we've had to adjust the Suitable timber base on the basis of site-specific findings. We will continue to make those adjustments as on-the-ground knowledge suggests that such changes are warranted. During the revision, we will need to revisit the timberland-suitability question as a matter of legal requirement.

Another concern is whether we're managing the land according to Prescriptive direction; we've had a tendency to manage timber-emphasis areas much differently than we do other Prescriptions outside roadless areas. Generally, various Standards and Guidelines come to bear and limit what we would do if we were really going to maximize or optimize wood fiber production.

Monitoring and Evaluation System

We should examine changing the current Monitoring And Evaluation Plan to emphasize progress toward achieving DFCs. Basically, under such a system we would examine what the geographic area looked like ten years ago, what we said it should look like and should produce, and what it looks like now and has produced. Key questions would be: Did we reverse the trend? Did we move it toward DFC? Possibly a graphical (GIS) representation might also be good.

We should examine implementing monitoring based on ecosystem-management elements such as seral-stage distribution, patch size, risk of catastrophic fire, risk of insect and disease epidemic, and watershed health. These measurements should be coarse-filter-type measurements and should be done in addition to fine-filter measurements such as used for T&E species and cultural resources.

For the Forest Plan revision, we should identify important elements to track progress toward meeting DFC, like, for example, percentage in given successional stage by spp, or risk of stand replacement fire, or watershed health, patch size, acres of high-risk stands for Mt. Pine beetle attack, etc.

Other Issues and Concerns

There is a need to define relative levels of risk of things like wildfire and forest health that we would be managing toward or willing to accept.

Roadless-area management and its relation to the current ASQ continue to remain controversial issues. The 1992 Amended Forest Plan attempted to resolve management direction for roadless areas that were then part of the Suitable timber base. As a result of the 1992 Amendment, the Forest reduced Suitable roadless areas from about 180,000 acres to 95,000 acres. Planning and implementation of timber sales continue to be highly controversial, however, despite the 1992 decision that appeared to resolve the roadless-area timber management issue. Roadless areas are key to fulfilling the ASQ objective. To fullyimplement the current ASQ of 24 MMBF/yr. would require obtaining approximately 35-40 percent of the ASQ volume from roadless areas.

There are a number of vegetation-management issues that we should address programmatically in the Revision. Questions that consistently arise at the project level include habitat fragmentation, wildlife corridors, patch size, and habitat connectivity. They all require "big picture" assessments to establish the proper context for project-level analyses.

Also, given the old-growth controversy that we experience on a case-by-case basis on every project decision, we should map, quantify, and provide for comprehensive old-growth management at the Forest Plan level. Though the 1992 Amended Plan quantifies old growth, additional data have been collected during the past three years that should be considered in developing old-growth management direction in the context of landscape-level Standards and Guidelines for vegetation management. The S&Gs should implement vegetative Desired Conditions that are developed in full consideration of range of natural variability.

We may need to separate the unroaded, unmanaged old growth from the roaded, managed old growth, since they are two different issues. Again, if we can handle this at the Forest Plan level, it could save us a lot of headaches at the project level.

The urban/forest interface presents a management challenge. As a result of an increase in residential construction and other development in the wildland/urban-interface areas of the Forest, and a lack of vegetative disturbance

from fire or silvicultural treatment, many small parcels of National Forest System land that are intermingled with private ownership are at a high level of risk for attack by insects and diseases, and for catastrophic wildfire events.

A combined hazard-and-risk analysis of insects, disease, and catastrophic wildfire should therefore be conducted as a part of the Forest Plan revision. A geographical representation of relative risk would be very useful in the prioritizing of hazard-reduction treatments. Hazard reduction in these areas will generally require a combination of silvicultural treatment and reintroduction of low-intensity fire.

The validity of our timber-growth and -yield projections may be in question. We will need to reassess predicted yields from the Suitable base as we revise the Forest Plan. We will also need to reexamine the appropriate ASQ, based on cost efficiency, community needs, and sustainable ecosystems. Modifications of the timber direction and level of ASQ should be a result of landscape analysis from an ecosystem perspective of all Suitable acres, previously entered or not.

Planning Questions from the 1992 Monitoring Issues Paper

- How should we manage roadless areas not recommended for Wilderness designation?
- What areas are suitable for timber harvest?
- What volume of timber can be provided from these lands to local markets?
- What is the local demand for timber from the San Juan NF, and what is the appropriate level of timber supply?
- Is the Forest's commercial timber program financially efficient?

Water, Soils, And Air

Evaluation of Plan Implementation

The average annual water yield from the SJNF is about 2.5 million acre-feet. Within the Forest, it is used nonconsumptively by aquatic and terrestrial ecosystems and consumptively to meet Forest Service purposes and those of other users. Some water is diverted and used off-Forest.

The downstream demand for water continues to grow, and there will certainly be conflicts among those interested in protecting and maintaining instream flows, those interested in developing water supplies to meet local and regional needs in the Upper Colorado River Basin, and those interested in meeting Lower Colorado River Basin needs or needs outside the Colorado River Basin. The Forest is negotiating with the Southwestern Water Conservation District and other involved parties to find a settlement to water rights litigation affecting instream flows, other reserved rights, and consumptive uses by the Forest.

The 1983 Forest Plan emphasized enhancement of water yield through vegetation management, primarily timber harvest; because of this emphasis, total annual water yield is one of the outputs tracked in these monitoring reports. The water-yield Prescription included in the '83 Plan has not been implemented, due to environmental and visual constraints, and is not included in the 1992 Amended Forest Plan. Over the past ten years, the emphasis in watershed management for the SJNF has shifted from increasing water yield to maintenance or improvement of aquatic and hydrologic integrity.

The 1983 Forest Plan did not include any Air-related activities in the monitoring plan.

Evaluation of earth gully plugs constructed in the 1960s and '70s throughout several areas of the Forest revealed both design and maintenance problems. These structures are being progressively reconstructed as funding permits. The reconstructed structures are monitored to identify any continuing maintenance needs.

Recent soil- and water-improvement projects have included road rehabilitation and wetland restoration. The Forest has rebuilt and/or upgraded water and sewage systems at campgrounds and administrative sites as part of the Federal Facilities Compliance Program.

Soil resource inventory information is being updated through the Integrated Resource Inventory (IRI) project.

Monitoring Activities: Ongoing and Current

Precipitation chemistry, the chemistry of airborne particulates, and visibility are monitored under the auspices of the national NADP and IMPROVE programs. The chemistry of selected lakes in the Weminuche Wilderness is also monitored by the USGS as part of the Forest's Air program.

Field reviews and implementation monitoring supporting the revision of allotment management plans have highlighted the difficulty of meeting forage-utilization standards in areas where cattle congregate, without aggressive actions on the part of permittees and Forest Service personnel administering the permits.

Field reviews and implementation monitoring associated with some projects have demonstrated the difficulty of getting compliance with best management practices without cooperation from the individual company..

Analysis of Need for Change

Goals and Objectives

The Goals in the 1983 Forest Plan for Soils and Water are:

1. Protect soils and water productivity so that neither will be significantly or permanently impaired;

2. Protect streams, lakes, riparian areas, and other bodies of water through management activities;

3. Improve water quality by allowing those watersheds presently below water quality Standards to recover;

4. Increase water yield through land treatment measures consistent with other resource objectives and water quality Standards.

The first Goal, to protect soil and water productivity, should be rearticulated to clarify the extent to which we are allowing ourselves to screw things up. First, we should manage our activities to prevent any impairment of water quality or soil productivity; second, any impairments that might occur must be limited in extent and intensity, and of short duration.

The second and third Goals are still valid.

The fourth Goal, to increase water yield, was eliminated in the 1992 Amendment. The Objectives (1992 Amendment) project a decline in water yield and approximately 170 acres of watershed improvements per year.

The linkage between Goals, Objectives, and outputs should be updated and should include the revised MAR objectives and outputs.

Standards and Guidelines

Achieving Resource Management/Protection

In general, we do seem to be doing things right, primarily because the Forest has enough of a collective knowledge base to figure out appropriate practices, management requirements, and mitigation measures–and when not doing something is the right answer. While the general direction in the Plan reflects laudable intentions for watershed management, the Standards and Guidelines (including those for Soil Resource management) reference obsolete inventory and analysis techniques, or are too vague to serve as management requirements and mitigation measures for specific activities.

Watershed conservation practices (WCPs) and other requirements and stipulations are applied. However, they are often not tracked from conception through implementation, nor are they systematically evaluated for effectiveness.

Many of the activities taking place on the Forest are supervised or administered by Forest Service personnel. WCPs and other management requirements and mitigation measures are included in contract, occupancy, or special-use stipulations, and are usually enforced by the individual responsible for administration of the activity. In some cases, the available enforcement tools are not effective in the face of concerted noncompliance.

Recommended Changes

1. Revise the Standards and Guidelines. Develop better linkages between the Standards and Guidelines, the Watershed Conservation Practices Handbook, and the Clean Water Act.

2. Emphasize systematic implementation monitoring for water, soils, and air resources. Monitor six to eight activities per District, per year. Participate in interagency audits of the implementation and effectiveness of selected projects. Develop a process which:

   - ensures that the people responsible for administering Forest activities are aware of all WCPs and other management requirements included in project EAs or EISs;

   - provides a process to document periodic inspections during a project and after its completion; and

   - provides at least a qualitative evaluation of the success or effectiveness of the management requirements.

   Such a process would assure the transfer of management requirements from EAs and EISs to contracts, special-use permits, and other documents authorizing occupancy of National Forest System lands and their implementation and relative effectiveness.

3. Continue effectiveness monitoring of selected projects.

   Monitor the effectiveness of management requirements and the effects of Forest activities for two to four projects Forestwide. Emphasize integrated monitoring of stream health.

   There are qualitative and quantitative techniques suitable for project monitoring, including photo points, channel cross-sections and profiles, macro-invertebrates or aquatic-habitat inventories, and intensive sampling of water quality

parameters and fish populations. The combination of techniques and the location of the monitoring will vary from project to project, depending on the objectives and the nature of the activity to be monitored.

4. Develop consequences and penalties for non-compliance with WCPs.

Management Area Prescriptions

The 9a Prescription as Currently Written Is Limited to Perennial Streams

The implicit limitation of the 9A Prescription to perennial streams and lakes is not appropriate, given our current understanding of the biological and hydrologic importance of intermittent streams as a part of the drainage network. It is not consistent with our current practices in watershed management.

General Direction and Standards & Guidelines

The Standards and Guidelines about maintaining these ecosystems in upper-mid-seral condition are contradictory to the dynamic nature of the processes affecting the system. Better to have management objectives that are site specific.

Limitation of instream-flow management to fisheries is no longer appropriate.

Reference is made to groundcover Standards, but there are no quantitative or qualitative factors.

Obsolete techniques are referenced, including HYSED and channel-stability ratings.

Recommended Changes

1. Reevaluate general direction for timber in 9A areas.
2. Although there is a statement that timber will be available on a low-yield basis, following statements include maintaining growing-stock-level Standards, utilizing firewood by both commercial and non-commercial methods, establishing satisfactory stands within a five-year period, and cutting stumps at ground level in the 100-year floodplain. Enquiring minds wonder if timber should be available at all from riparian areas, and what are we doing making stumps in a floodplain?
3. Revise the General Direction and Standards and Guidelines.

Monitoring and Evaluation System

"Quantity Of Water Meeting Quality Standards" Is Not a Good Measure of the Quality or Quantity of the Forest'S Soil and Water Activities or Stewardship

Note that increased water yield as an Objective and monitoring requirement was eliminated in the 1992 Amendment.

"Water meeting quality standards (acre-feet per year)" is a Plan output and is currently tracked in the monitoring report on a Forestwide basis. This quantity is an estimate derived by subtracting the water yielded from areas such as the Upper Animas and other historic mining districts from the estimated Forestwide yield. While important as part of the existing condition, this focus on mined areas and chemical standards is only part of the water quality and stream health issue.

Recommended Changes

1. Do not continue to estimate Forestwide Water Yield Meeting Quality Standards/Goals.

   The estimates of water yield and the "quantity meeting quality" Standards are not accurate enough to be sensitive measures of the Forest's activities from year to year, nor do they reflect the current management emphasis on the maintenance of aquatic and hydrologic integrity, rather than water yield.
2. Develop and implement integrated, holistic inventory and monitoring techniques to assess stream health.

   A combination of biological and physical characteristics is a better basis for assessing stream health and the effects of management activities.
3. The current Monitoring Requirements for Soils need additional criteria and requirements, so that the implementation of Plan direction and Standards and Guidelines can be better evaluated.
4. For Soils and Riparian Areas, time constraints and budgets make the Soils S&Gs hard to monitor.
5. We need to be able to measure, map, and monitor the distribution of seral stages to see if we have met our S&Gs.

The Forest Is Not Monitoring the Effects of Forest Activities on Air Resources

The Forest is collecting baseline information about precipitation chemistry and sensitive resources potentially affected by changes in air quality. However, no implementation or project monitoring is being done.

Recommended Change

Monitor the effects of Forest activities on air quality and/or sensitive receptors.

Lands

Evaluation of Plan Implementation

Land Line Location

The Forest, working with the BLM, has managed to conduct a dependent resurvey of one township a year. The Forest needs a maintenance program in order to protect our posting-and-marking investment, but is not currently funded for that activity.

Rights-of-Way Acquisition

The current funding is adequate for the amount of Forest target assigned by the Regional Office. There is no need to change the methods of monitoring implementation of this program. Although we have been able to achieve more than we anticipated in the Forest Plan, uncertain funding will not permit us to predict continued achievement at this level.

Land Adjustment

In 1991, we purchased 2,195 acres in the Piedra Valley and 654 acres within the boundaries of the Weminuche Wilderness.

In 1992, with a great deal of community support and assistance, we were able to purchase 530 acres in the Hidden Valley area, north of Durango. This acquisition will allow us to plan with residents for the interpretation and protection of an archaeological site, and provide additional recreational opportunities.

The program remains underfunded to accomplish the targets identified in the Forest Plan.

Because of the complexity of these projects, an appropriate level to exchange would be 80 acres, rather than the 500 in the Forest Plan. We need to continue to pursue opportunities to work with partners, including local open-space groups.

Small Tracts Act cases would be appropriate to include in the Forest Plan as a monitoring item when the Forest Plan is revised. This program should be a priority for the service it provides the public, as we are able to work with people to resolve encroachments.

If we maintain an acquisition program we can continue to acquire "easier" rights-of-way; however, funding opportunities that we have used may decrease. Other negotiated rights of way are likely to be more expensive and time consuming.

1994	Becket Exchange	354 acres
1995	Electra Exchange	1,200 "
1996	Lindner Exchange	200 "
1997	Rico Exchange	480 "
1997	Forest Lakes Exchange	120 "

Infrastructure

The road development program on the SJNF has historically been accomplished through two sources: in conjunction with the timber sale program, and through appropriated funding in the Regional Capital Investment Program. Yearly fluctuations in this program reflect the fact that it is funded through the direct-appropriations process and is not necessarily linked to other Forestwide program and needs, and is subject to annual increases or decreases in Congressional budgeting for National Forest System roads. In addition, funding for this type of road development work is obtained on a competitive basis through the Regional Office.

Evaluation of Plan Implementation

We have begun to focus on reconstruction and gravel replacement to try to maintain roads as directed in the Forest Plan. We are also replacing bridges that are unsafe. The Forest has made good progress with bridge reconstruction and replacement, but still has significant needs.

There has been some shifting of projects among the years that causes us to show differences between miles planned and accomplished.

Analysis of Need for Change

Goals and Objectives

We have found no difficulty in implementing Forest Plan Standards and Guidelines, but accomplishment schedules were optimistic.

It is appropriate to reassess our travel management policy and fully integrate that direction with other resource needs in the revision of the Plan.

Heritage Resources

Analysis of Need for Change

Goals and Objectives

The Goals for Heritage Resources do not address values other than recreation and research. The Goals are biased toward Western scientific values and recreation, while overlooking broader social values. Goals and Objectives incorporating traditional cultural values, or multiple social values, should be considered. Heritage Resource Objectives that are independent of recreation Goals and Objectives should be developed to reflect other aspects or values of Heritage Resource management.

There are many different aspects of the Heritage Resources program on the Forest that either are not adequately identified in the Goals and Objectives, or do not have appropriate Indicators and units of measure. In addition to the recreation support (public-education or interpretive programs), there are Heritage Resource inventory and evaluation, site stabilization and preservation, ecosystem analysis (paleo-environmental reconstruction and analysis of human effect on the natural environment), consultation, and curation. There is a need to measure these activities with appropriate Indicators and units of measure. These data are available and can be produced when agreement on Indicators is achieved.

The Management Area Direction and units of measure for monitoring the progress toward achieving Heritage Resource Goals are not adequate to measure all of the Goals identified for Heritage Resource management. The only Indicators and units for evaluating progress toward Heritage Resource Goals are recreation and dispersed-recreation user-day Indicators. These are not adequate measurements of any of the Heritage Resource Goals.

For example, the first Goal for management of Heritage Resources states, "Locate, determine significance, and where appropriate, preserve historical and archaeological sites" The Indicators and units should include number of sites located and evaluated, number of sites eligible for the National Register of Historic Places, and number of sites where preservation treatment and off-site or on-site interpretation have occurred.

The second and third Goals also do not have appropriate Indicators. The second Goal for management of Heritage Resources states, "Manage exceptional historical and archaeological sites for increased public use and visitation, while still protecting the values of the site." There are no Indicators or units demonstrating what site values are protected and how, or if, it was done. The third Goal for management of Heritage Resources states, "Make historical and archaeological sites available for study by agencies involved in research." No research measurements are established.

Indicators and units of measure need to be established that are independent of recreation. They should also be defined in more detail than "Nonrecreation" (currently applied in the Management Area Prescriptions) to reflect the diverse activity in Heritage Resource management. Although there is overlap with recreation Goals, Heritage Resource management Goals and Objectives should appear organizationally independent from recreation in the Forest Plan document.

Standards and Guidelines

There are Department of Interior, National Park Service Standards and Guidelines used for preservation of historic and prehistoric sites, National Register evaluation, definitions of traditional cultural properties, artifact curation, and others, that are current and provide more detail than FSM 2300/2360. FSM 2360 is the only reference for Standards and Guidelines in the management of Heritage Resources.

Management Area Prescriptions

Add the following ¶: "There are five National Register Districts on the Forest: Chimney Rock, Falls Creek, Spring Creek, Lost Canyon (Archaeological Areas), and the Anasazi Archaeological District. At present, Chimney Rock and Falls Creek have 10C designations. The other archaeological districts need to have Prescription review, in particular the Anasazi Archaeological District surrounding McPhee Reservoir. This should be done at the landscape level, since the National Register district boundaries may coincide with landscape boundaries."

Other Issues and Concerns

Inventory of Heritage Resources on the SJNF since 1983 has revealed a concentration of some of the most exceptional and numerous sites on the Colorado Plateau, and in Region 2. Heritage Resources on the Forest share designation with other cultural sites and districts on the Colorado Plateau as one of the world's most important–and at the same time, threatened and endangered–cultural areas (National Trust for Historic Preservation 1995). The Four Corners region, including several historic and prehistoric sites on the Forest, has achieved international recognition. This Forest has become a heritage and ethnotourism destination, and the FS has become a major regional partner in providing these opportunities.

Significant legislative changes for managing Heritage Resources have occurred since 1992. These new mandates include 1992 amendments to the National Historic Preservation Act (NHPA) and enactment of the Native American Grave Protection and Repatriation Act, 1992 (NAGPRA). The most significant product from the amended NHPA and NAGPRA, which is not addressed in the

Forest Plan, is direction for Native American consultation regarding treatment of traditional cultural places (which may range from individual sites to landscape features, and may include tangible and intangible values), and treatment of sensitive collections (human remains and associated funerary objects, and objects of cultural patrimony).

Over the last year, information collected from interviews with the public and with tribal governments has resulted in the introduction of the concept of Heritage Area management. Heritage Areas are significant social and cultural landscapes, including historic and archaeological districts listed on the National Register of Historic Places, that are managed to protect and enhance their unique and irreplaceable recreational, traditional cultural, and scientific values. This goal is achieved through land management practices incorporating a combination of conservation and preservation strategies. Other Forest land management activities are not necessarily excluded from these areas, but may be restricted to protect heritage resource values.

So far, nine Heritage Areas have been identified on the Forest. The nine are primarily defined by National Register districts where primarily dispersed recreation and livestock management historically, and presently, threaten archaeological resources. Additional Heritage Areas may be defined following an inventory of traditional cultural properties and landscapes with the different cultural groups (Tribal Nations in particular) who consider the present-day Forest to be aboriginal territory. Heritage Area designation and management planning will promote heritage resource preservation and public-enjoyment goals.

To facilitate management planning for the proposed Heritage Areas, and to minimize the impact on heritage resources as well as the variety of management activities occurring within these locations, there is a need to systematically measure impact on a variety of heritage resource types from dispersed recreation−the use of off-highway vehicles (OHVs), in particular−and livestock grazing. These data need to be gathered through regular and systematic site monitoring and quantitative analysis. At present, there is no systematic monitoring program that specifically considers the effects of OHV use and livestock grazing on the sites within the proposed Heritage Areas.

The potential for conflict between the demand for increased opportunity and diversity of heritage tourism and educational experiences, and the demand for increased sensitivity in the treatment of traditional cultural places and collections, is imminent. The polarity of the conflict may not be eliminated, but can be mitigated by the Forest Service's electing to improve how we manage for multiple social values in general, and the treatment of Heritage Resources in particular.

The Forest Plan recognizes the economic and recreational value of Heritage Resources and measures this by user numbers, but does not recognize the increasing emphasis on managing for multiple values (i.e., traditional cultural). Additionally, sites or landscapes on the Forest that may not demonstrate recreational value may still have other values to emphasize, including traditional cultural ones, or research value. The Forest Plan is inadequate in addressing these concerns in the treatment of Heritage Resources.

Interpretation of sites is only one area of consideration where management of traditional cultural properties is a concern. In order to comply with 1992 revisions of the National Historic Preservation Act, consultation with Native Americans on the treatment of traditional cultural properties (places) is required for all undertakings.

Of particular note, the proposed 36 CFR, Part 800 regulations implementing the 1992 amendments provide direction for consultation on traditional cultural properties. Two of the most significant items are: talk to the tribes in a culturally appropriate manner (personalized), and talk to the tribes as a consulting agency in developing management alternatives prior to public scoping.

These directions are drastically different from our present approach to consultation at the public-scoping level (usually with no more than a single scoping letter), and may profoundly affect how Forest action alternatives are developed and selected.

Fire

Fire has always been part of the landscape. The presence of fire, or its absence, has a profound effect on the natural life systems and the surrounding associated ecotypes. There is evidence that fires have burned large acreages within the San Juan - Rio Grande NFs area throughout history.

Prior to the time of domestic livestock grazing and organized firefighting (early 1900s), most fires were of low intensity, creeping through the forested lands and fanning across open meadows. Large stand-replacement fires were not common except in the large mixed-conifer stands; the frequency was in the 150−300-year range.

Many plant communities were maintained in a seral stage by recurring natural disturbances, including fire. Until recently, land management agencies such as the Forest Service were expected to suppress all wildfires, to minimize acreage burned. Little consideration was give to a corresponding application of prescribed fire to maintain ecosystem health.

This has resulted in ecological changes in the Forest and

surrounding rangelands. The buildup of fuels has changed the character of the wildland ecosystem and creates a threat to resources, life, and property. Recent insect activity or wind blowdown in some areas has changed the type and rate of fuel buildup, thus creating the potential for fires to be more intense and more costly to suppress. The long-term intent of an active prescribed-fire program is to reduce these effects and improve the overall Forest health.

The fire management program on the San Juan - Rio Grande NFs is a coordinated interagency effort involving federal, state, and local agencies. The overall fire management objective is to provide a cost-effective program that responds to land and resource management Goals and Objectives. This includes fire protection, suppression, and use.

In FY 99, the Forest implemented an expanded fire management program based on the NFMAS (National Fire Management Analysis System) analysis. With this process incorporated, the Fire programs on the Forest will be taking an active role in using fire to meet Forest ecosystem-management objectives. Along these lines, a Wildland Fire Management Plan was completed during the spring of '97 and operational during the '97 field season. This Plan sets long-term direction to use prescribed and wildland fire to meet resource objectives and reduce hazardous fuels.

Analysis of Need for Change

Goals and Objectives

The Plan needs to be amended to disclose fully the ecological and societal risks of using and excluding fire. Current planning does not consider the risks, probabilities, and consequences of various management strategies, e.g., wildfire versus prescribed fire versus fire exclusion. Existing Goals and Objectives do not recognize fire as an essential ecological process and natural change agent. Ecosystem problems associated with fire exclusion are increasingly being recognized as having reached severe proportions, adversely affecting biological diversity and increasing the risk of conflagration events.

Existing Goals and Objectives do not adequately define the integration of multifunctional burn projects done for wildlife, range, timber, etc. Also, the treatment of activity fuels is not addressed as it relates to risk/hazard reduction and resource protection.

Also, the Plan needs to be amended to include the new Federal Wildland Fire Policy actions, and realistic targets and funding identified by the NFMAS planning process.

Standards and Guidelines

Existing Standards and Guidelines identify the need for prescribed-fire ignitions (planned and unplanned) as a management tool. This Standard and Guideline needs to be updated by the Wildland Fire Management Plan and Amendment. There are no Standards and Guidelines concerning the use of appropriate response under the federal Wildland Fire Management Policy.

As with both appropriate-response and prescribed-fire strategies, there is no direction on the role of fire on a landscape. Direction is needed to support the proper use of fire on differing landscapes; the susceptibility and resilience of a particular landscape to fire effects need to be considered in building useful Standards and Guidelines.

No direction exists on the role of fire within and adjoining the urban interface, which is rapidly increasing in areas susceptible to frequent fire occurrence.

Standards and Guidelines need to be devised for the treatment of activity-generated fuels from timber harvesting and mechanical hazard-reduction projects.

Management Area Direction

Current Management Area direction on the actions fire management can take to meet Forestwide Standards and Guidelines is lacking. Management Area Prescriptions that are attainable and specify fuel-modification and ignition methods need to be developed for Management Areas. Prescriptions need to reflect acceptable ecosystem and social Forest Plan direction.

Air quality and smoke management mitigation and monitoring need to be developed.

Monitoring and Evaluation

The monitoring aspect of prescribed and wildland fire activities needs to be included. This calls for a consistent, well-planned scientific assessment of pre-burn, burn, and post-burn conditions. Currently, the gathering of data is fragmented: fire folks gather data on wildfires and fuel management, timber folks on brush disposal, wildlife folks on wildlife-habitat burns, etc. Therefore we have no overall picture of the efficacy of the use of prescribed fire and wildland fire. The existing data do not help guide our planning or strategic thinking in the context of ecosystem management.

Some tools that assist in data collection and monitoring include Fire Protection Assessment (risks and values); NFMAS; air quality models; fire behavior models; fire statistical databases, historical fire atlases, and historical repeat photographs.

We also need to monitor the activity fuels generated; this would include Prescriptions for treatment, whether they be piles or broadcast, chipped or burned, etc.

Ecology / Biodiversity

Analysis of Need for Change

The current Forest Plan contains no specific Goals, Objectives, management requirements (management activities, general-direction statements, Standards and Guidelines), or monitoring plans for Ecology and Biological Diversity. When this Forest Plan is revised, it will be important to develop these Plan components, since issues and management considerations associated with Ecology and Biological Diversity will need to be addressed.

Goals and Objectives

There are no specific Goals or Objectives for Ecology and Biological Diversity, but some of the Goals listed under the headings of Vegetation, Wilderness, Wildlife, Timber, and Soils and Water apply to these topics. They are:

1. Improve the health and vigor of all vegetation types,
2. Manage Wilderness to preserve the wilderness character,
3. Improve wildlife habitat diversity on approximately half of the Forest,
4. Improve the Forestwide age-class and species diversity to improve forest health and wildlife habitat,
5. Perpetuate the aspen type,
6. Protect soil and water productivity, and
7. Protect streams, lakes, riparian areas, and other bodies of water through management activites.

These Goals are still valid, and are ecologically important because they provide direction to help protect the biological and physical components necessary to maintain and improve biological diversity. For Goals 1, 3, and 4, above, it is also important to maintain these things as well as improve them. Some additional clarification on what is meant by "health" and "forest health" for Goals 1 and 4 above would be helpful, as these terms mean different things to different people.

Standards and Guidelines

There are no specific Management Requirements (management activities, General Direction statements, or Standards and Guidelines) or Management Areas for Ecology and Biological Diversity. However, some of the General Direction statements and Standards and Guidelines found in the Forest Direction and Management Area Prescription sections listed under the management activities headings of Diversity on National Forests, Wildlife and Fish Resource Management, Wildlife Habitat Improvement and Maintenance, Range Resource Management, Silvicultural Prescriptions, Riparian Area Management, and Soil Resource Management, and Wilderness Management apply to these topics.

Most of the General Direction statements and Standards and Guidelines are still good, but many of them need to be reviewed and reworked so they are more clear, more quantifiable, and more current.

- The Standards and Guidelines related to vertical diversity, horizontal diversity, and old growth that are associated with the General Direction statement to "Maintain structural diversity of vegetation on units of land 5000-20,000 acres in size or 4th order watersheds that are dominated by forested ecosystems" need to be reviewed and likely changed, because it is difficult to measure them, issues of scale need to be better clarified, a specific "unit" may need more or less of these components, and there is more current information in the literature and on the Forest to better identify Standards and Guidelines related to these issues.
- Range utilization Standards need to be reviewed and likely changed to better reflect current range conditions and make the Standards more species specific and site specific. Overutilization of rangelands, particularly grasslands, can have a major adverse affect on the abundance and distribution of native species, particularly grassland species.
- The Standards and Guidelines related to continuous-grazing systems need to be reviewed, since in most cases these systems have detrimental effects on the abundance and distribution of native species, particularly native forage grasses.
- General direction for silvicultural prescriptions should be updated to incorporate new research and information (Romme et al.– fire history and reference conditions) on ponderosa pine, mixed conifer, spruce fir, and aspen forests, so that timber harvest activities more closely resemble natural disturbances.
- The Standard and Guideline to "Maintain all riparian ecosystems in at least an upper mid-seral successional stage based upon the R2 Riparian Ecosystem Rating System" needs to be changed, since there no longer is an R2 Riparian Ecosystem Rating System. Also, we don't have good descriptions of what a mid-seral stage is for all the different riparian types we have, and there may be reasons why we would choose to manage a riparian site for a condition less than mid-seral.
- The Standards and Guidelines related to the general-direction statement to "Manage non-commercial forest

and non-forest cover types" need to be reviewed and likely changed, as we really don't actively manage these lands under rotation systems, and the consequences of implementing projects to meet these Standards and Guidelines may be detrimental to biodiversity.

- For riparian areas, more specific Standards and Guidelines need to be developed to clearly outline when timber harvest is allowed, and what mitigation measures are needed.

- For Research Natural Areas, the general-direction statement to "Restrict grazing by livestock to that essential for the maintenence of a specific vegetation type" needs to be changed, since livestock grazing in RNAs will not be allowed, in most cases.

- The Standard and Guideline to "Control wildfires occurring within the Narraguinnep RNA" needs to be reviewed; wildfire is a natural ecological process that should occur in an RNA.

Monitoring and Evaluation

There are no specific monitoring and evaluation plans for ecology or biodiversity.

Scenic Resources And Interpretation

Analysis of Need for Change

Goals and Objectives

For the most part, the Goals and Objectives appear valid. However, since these were established the Forest has reintroduced historical and environmental interpretation as an integral part of its management. In fact, in 1989-90, interpretation was one of the Forest's top three priorities. It should be considered as a viable program and merged into the Forest Plan.

It seemed that we received a generally favorable response when we queried the public regarding the current G&Os in 1994, during the "Experiment" effort.

Regarding the scenic resource, the single mention in the Goals section is OK. No quantification in the Objectives section, perhaps because of the challenge to be measurable. Again, in the next effort we should look at including Interpretation in this section.

Standards and Guidelines

Management Standards and/or Guidelines should be completely redone, to be in accordance with the new FS scenery-management system.

Management Area Prescriptions

There were a some glaring problems with the VMS wording in the Prescriptions, i.e.:

- "Do not exceed the VQO of Modification" was often misunderstood. Some then thought that the VQO was Modification, or that they could not go to a higher VQO, such as Partial Retention. It would have been better stated, "The minimum VQO for the area is modification."

- The Prescription system took a very general direction for the VQOs, and constrained the application of the VMS to the variables of a Prescription Area. The new SMS must be applied to the future Plan Prescriptions.

Monitoring and Evaluation

Compliance with Visual Quality Objectives should be a monitoring element. Monitoring techniques would be field and office reviews of projects, permits, roads, structures, EAs, and EISs. Frequency of measurements would be a 25% sampling annually of work plans, 10% of permits, 100% of all sites with high Retention VQO. Action would be initiated by any reduction in the approved VQO.

Other Issues and Concerns

A contemporary management issue affecting this program is the increased public visitation yearly to attractions on the Forest. For example, the San Juan Skyway has increased in popularity and use annually since its designation in 1988. This not only brings about the need to initiate more visitor-contact programs such as interpretation, but also brings up the importance of maintaining and enhancing the scenic quality along its viewsheds. The major reason the public visits Colorado National Forests is the scenery. And we receive more people participating in the "Driving for pleasure" recreation activity than in any other single use on National Forests.

This is mainly a national issue, with some regional influence.

Should this issue be a major focus of the Forest Plan revision? We should discuss the increased use and people-contact programs such as interpretation very closely. It should be part of the total picture, if in fact we are going to produce a Plan that is balanced for all resources.

Recreational use will continue to grow at a steady rate. Programs such as maintaining or enhancing the scenery will become increasingly important, as will visitor-contact programs, chief of which is Interpretation. We touch more people through interpretation than through all other contact programs combined.

Authors

Recreation and Travel Management Jim Upchurch

Wilderness Jim Upchurch

Wildlife Kathy Peckham

Fisheries Dave Gerhardt

Range Paul Crespin

Timber Dave Dallison

Water, Soils, and Air
Katherine Foster

Lands Paul Beaber

Infrastructure Bob Sieger

Heritage Resources
Sharon Hatch

Fire Scott Steinberg

Ecology/Biodiversity
Jeff Redders

Scenic Resources and Interpretation Dick Ostergaard