## INTRODUCTION

The purpose of monitoring and evaluating the implementation of the Forest Plan is to inform the decision maker of the progress toward achieving the goals, objectives, and standards and guidelines.

Monitoring will determine:

- if the management prescriptions are applied as directed.
- if standards are being followed.
- if the Forest is achieving the objectives of the Forest Plan.
- if the application of management prescriptions is responding to public issues and management concerns.
- if the effects of implementing the Forest Plan are occuring as predicted.
- if the costs of implementing the Forest Plan are as predicted and are acceptable.
- if management practices on adjacent or intermingled non-Forest lands are affecting the Forest Plan goals and objectives.

A detailed annual monitoring action program will be prepared as part of the total Forest annual program of work. This annual monitoring program will include the details on the amount and location of monitoring to be accomplished based on the approved program of work and funds available for monitoring. Specific locations, intensity of sampling, and person-days required will be identified in the annual monitoring program.

Evaluation of the results of the site-specific monitoring program will be documented in the annual evaluation report. The significance of the results of the monitoring program will be analyzed and evaluated by the Forest interdisciplinary team. These evaluations will address changes in standards and guidelines, costs, and outputs and recommendations for plan amendments or revisions.

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

- no action needed. Monitoring indicates goals, objectives, and standards are being reasonably achieved;

- refer recommended action to the appropriate line officer for improvement of application of management prescriptions;

- modify the management prescription as a Forest Plan amendment;

- revise the projected schedule of outputs; or

- initiate revision of the Forest Plan.

The documented file of the Forest Supervisor's decisions resulting from monitoring and evaluation is maintained for future use in amending or revision of the Forest Plan. An annual evaluation report of these decisions will be prepared and sent to the Regional Forester for his consideration.

The Forest Plan's monitoring requirements follow. For each activity, practice, or effect to be monitored, one or more measurement techniques and the expected future condition to be met are specified. A frequency for measuring and reporting the monitored item is established, and the expected precision and reliability of that measurement is stated. (Precision is the exactness or accuracy with which the data will be collected; reliability is the degree to which the monitoring accurately reflects the total Forest's situation.) The Forest Plan provides funding for all monitoring items, no matter what the budget level, out of regular appropriations.

OUTPUTS

1. ITEM MONITORED:

   Management attainment report items.

2. PURPOSE:

   Verify achievement of output targets.

3. EXPECTED FUTURE CONDITION:

   Output targets will be attained in accordance with the Forest Plan.

4. MONITORING METHOD:

   Management Attainment Report

5. FREQUENCY:

   Once per year.

6. EXPECTED PRECISION/RELIABILITY:

   ±5%/±5%

7. TIME FOR REPORTING:

   End of fiscal year.

8. EVALUATION:

   If outputs fall outside the scheduled range of implementation, an evaluation will be made by the ID Team and Plan modification may be necessary.

WILDLIFE

1. Items Monitored:

   A) Population and habitat trends of management indicator species.

   B) Population and habitat trends of State and Federally listed plants and animals and sensitive species.

2. Purpose:

A) Federal and State Regulations

B) Forest issue related

C) Meet Statewide wildlife and fish comprehensive plan objectives.

D) Provide regularly scheduled automatic feedback to determine if wildlife and fish population habitat objectives are being met.

3. Expected Future Conditions:

A) Merriam's turkey, squirrel, elk, and resident trout populations are expected to increase because of improved habitat condition.

B) Ptarmigan and bighorn sheep habitat will be maintained or improved to at least provide habitat for minimum viable populations.

C) Threatened and endangered species populations and habitat will be protected and improved as necessary to aid in the recovery of the species.

D) Hairy woodpecker, plain titmouse and Brewer's sparrow populations may decrease over time in specific areas impacted by management activities, but populations will be maintained at levels greatly exceeding minimum viable populations.

E) Habitat conditions for state listed species not included as indicator species will be maintained or improved as needed to keep them from being placed on Federal lists.

F) Sensitive plants, and plants nominated for Federal protection will be monitored and protected as needed to keep them from being placed on Federal lists.

4. Monitoring Methods:

A) Nongame Animals:

1. Point-counting method developed by Reynolds et al.

(Reynolds, R. T., J. M. Scott, and R. A. Nussabaum. 1980. A variable circular-plot method for estimating bird numbers. Condor 82:309-313.)

2. Monitor management guilds as developed by Short and Burnham, and modified by Verner.

(Short, H. L., and K. P. Burnham. 1982. Technique for structuring wildlife guilds to evaluate impacts on wildlife communities. USDI Fish and Wildlife Service, Special Sci. Report-Wildlife 2244.33 pp.)(Verner, J. In press. The guild concept applied to management of bird populations. Environ. Manage.)

3. Single-season monitoring by Verner.

(Verner, J. 1980a. Birds of California oak habitats-management implications. Pages 246-264 in T. R. Plumb, tech. coord. Proceedings of symposium on the ecology, management, and utilization of California oaks. USDA Forest Service, Gen. Tech. Report PSW-44. Pacific Southwest Forest and Range Exp. Sta., Berkeley, Ca 368 pp. Verner, J. 1980b. Bird communities of mixed-conifer forests of the Sierra Nevada. Pages 198-223 in R. M. DeGraaf, tech. corrd. Workshop proceedings: management of western forest and grasslands for nongame birds. USDA Forest Service, Gen. Tech. Report INT-86. Intermountain Forest and Range Exp. Sta., Ogden, Ut.)

4. Monitor trends in habitat by Thomas et al.

(Thomas, J. W., R. J. Miller, C. Master, R. G. Anderson, and B. E. Carter. 1979. Plant communities and successional stages. Pages 22-39 in J. W. Thomas, tech. ed. Wildlife habitats in managed forests: the Blue Mountains of Oregon and Washington. Agric. Handbook No. 553 USDA Forest Service, Washington, D.C. 512 pp.)

5. Other cooperative studies in conjunction with New Mexico Department of Game and Fish (NMDG&F).

B) Game Animals:

1. New Mexico Department of Game and Fish and Forest Service census techniques and resultant data.

2. Monitor trends in habitat

C) Threatened and Endangered Species:

1. Single-season monitoring

2. Monitor trends in habitat

D) State listed species.

1. Direct counts and other cooperative studies with NMDG&F.

2. Monitor trends in habitat

E) Sensitive Plants:

1. Direct counts
2. Monitor trends in habitat

F) Fish and Aquatic Invertebrates

1. New Mexico Department of Game and Fish and Forest Service census techniques and resultant data.

2. Monitor trends in habitat annually.

5. FREQUENCY - Baseline Data Collection Program:

A) Five years of inventories to provide baseline data for use in evaluating results of monitoring activities.

6. FREQUENCY - Monitoring Program:

A) Nongame species:

1. Monitor every two years, of management guilds of birds in habitat especially vulnerable to management actions - late

successional mixed conifer and ponderosa pine forests, riparian habitats, and at meadow edges, pinon-juniper and sagebrush.

2. Monitor other habitats and species using appropriate methods every five years.

3. Monitor trends in habitat diversity every five years.

4. Monitor compliance with Regional and Forest standards and policies related to maintenance and/or improvement of nongame species habitat annually.

B) Game Animals:

1. Analyze State Game and Fish data and monitor trends in populations through cooperative studies with NMDG&F annually.

2. Monitor trends in habitat diversity every five years.

3. Monitor compliance with Regional and Forest standards and policies related to maintenance and/or improvement of game animal habitat annually.

C) Threatened and Endangered Species:

1. Monitor annually during breeding and rearing seasons.

2. Monitor trends in habitat annually.

3. Monitor compliance with Regional and Forest standards and policies related to maintenance and/or improvement of listed species habitat annually.

D) State Listed Species:

1. Analyze State Game and Fish data as available and monitor population trends through cooperative studies with NMDG&F annually.

2. Monitor trends in habitat annually

3. Monitor compliance with Regional and Forest standards and policies related to maintenance and/or improvement of listed species habitat annually.

E) Sensitive Plants

1. Monitor annually

2. Monitor trends in habitat annually

6. EXPECTED PRECISION/RELIABILITY:

A) Nongame species - ±10%/±80% (Birds and variable other species)

B) Game Animal Data - Variable by species

C) Threatened and Endangered Species - Statistical analysis may not be necessary because total known population is monitored.

D) State listed species - ±°20%/±°80% (Amphibians and variable other species)

E) Sensitive Plants - same as C

F) Fish and Aquatic Macroinvertebrates - Same as B.

7. TIME FOR REPORTING:

A) Nongame animals:

1. Baseline Data - Yearly, 1-5 of first decade.

2. Monitor populations - years 6, 8, 10 of first decade.

3. Monitor habitat - Yearly, years 1-10.

B) Game Animals:

1. Analyze State Game and Fish data and establish baseline data - yearly,

2. Monitor habitat - yearly.

C) Threatened and Endangered Species:

1. Monitor populations - yearly,

2. Monitor habitat - yearly.

D) State listed Species:

1. Monitor populations and establish baseline data - yearly,

2. Monitor habitat - yearly.

E) Sensitive Plants:

1. Monitor populations - yearly,

2. Monitor habitat - yearly.

F) Fish and Aquatic Macroinvertebrates.

1. Monitor populations - yearly

2. Monitor habitat - yearly

8. EVALUATION

The start-up cost of the Plan will involve pre-monitoring inventories of management indicator species, State and Federal threatened and endangered species, and sensitive plants to design a cost-effective monitoring program for these species. Before monitoring of management guilds can begin, a sufficient number of counting points must be located in each of the selected vulnerable habitats. The goal is 200 points in each habitat, and selection of the points must conform to constraints of statistical analysis.

The monitoring system includes Wildlife and Fish Operation and Maintenance costs of management, analysis, and interpretation of the data obtained from monitoring. Some costs may be reduced by cooperatively undertaking the monitoring of individual species and management guilds with adjacent National Forests. The proposal has an integrated system involving three levels of monitoring: (1) Species-only those management indicator species as required by

law; (2) management guilds of birds in habitats especially vulnerable to change through human activities; and (3) habitats-most wildlife species would be monitored by inference from trends in habitats, based on knowledge of each species' habitat requirements.

It should be realized monitoring of wildlife resources on such a scale as proposed is at best tentative and exploratory. State-of-the art knowledge indicates it is a suitable system at the present time, but it must be noted that modifications may be needed within the planning period to better indicate the effects of National Forest management activities on the Carson's wildlife resources.

FACILITIES 1

1. ITEM MONITORED

Forest road closures and obliterations.

2. PURPOSE

Forest issue related.

3. EXPECTED FUTURE CONDITION:

The Forest currently has 4,291 miles of roads. most of which are open for public access. It is estimated that 1,400 miles of existing travelways are not needed for resource management and 700 miles should be obliterated in the first 10 years to reduce maintenance costs, to control erosion, and to improve wildlife habitat. In addition, travel management objectives will be developed for all Forest Development Roads (FDR) and travelways which will further determine and verify which are needed and should be included or remain on the FDR System, which are needed only periodically and should be closed, and which should be added to the obliteration list. New construction of Forest Development Roads is primarily for timber sales. Approximately 70% of these roads should be local terminal functional classification and should be closed promptly after resource management activities have ended.

4. MONITORING METHOD:

District Rangers will provide the Forest Engineer by January 1 of each year mapping and **accomplishment data showing the closures and obliteration for the previous fiscal year.**

The Forest will maintain and update all data with regard to closures and obliterations of Forest Roads in the Transportation Information System.

5. FREQUENCY:

Annual

6. EXPECTED PRECISION/RELIABILITY:

a) ±10% ±10%

7. TIME FOR REPORTING:

Annual

8. EVALUATION:

Yearly evaluation will indicate the effectiveness of road management **closure** and obliteration activities. Differences in the miles of closed roads on the Forest Development Road System or miles of obliteration of unneeded roads exceeding ±15% of the Forest Plan will require evaluation by the ID Team and the recommendation of corrective measures to the Forest Supervisor.

FACILITIES 2

1. ITEM MONITORED:

Forest road development.

2. PURPOSE:

Forest issue related.

3. EXPECTED FUTURE CONDITION:

The Forest currently has 4,291 miles of roads, 1400 miles of which are not needed for resource management and 700 miles should be obliterated in the first 10 years. New construction of Forest Development Roads, primarily for timber sales. Approximately, 70% of these roads should be local terminal functional classification and should be closed promptly after resource management activities have ended. Additional miles will be reconstructed during the same period, resulting in a substantial improvement in the cost efficiency and ease of maintenance of the transportation system.

4. MONITORING METHOD:

The Project Engineers will provide to the Forest Engineer by January 1 all necessary data with regard to the past fiscal year's accomplishments for road construction and reconstruction in order to update and monitor the status of the Transportation Information System and development unit cost.

The Forest will maintain and update all data with regard to improvements to the Forest Development Road System in the Transportation Information System.

5. FREQUENCY:

Annual

6. EXPECTED PRECISION/RELIABILITY:

a) ±10% ±10%

7. TIME FOR REPORTING

Annual

8. EVALUATION:

Yearly evaluation will indicate the level and cost of road development activities. Changes **of forest road development** ±15% of **Forest Plan** will require evaluation by the ID Team and the recommendation of corrective measures to the Forest Supervisor.

RECREATION 1

1. ITEM MONITORED

Actual dispersed recreation use in Recreation Opportunity Spectrum (ROS) settings.

2. PURPOSE:

Federal Regulation, sample output.
Forest issue related.

3. EXPECTED FUTURE CONDITION:

Demand for dispersed recreation will be within capacity. Quality of experience will increase due to more intensive management.

4. MONITORING METHOD:

A) Recreation information Management Report (RIM, based on District Ranger estimates).

B) Inspection of heavily used dispersed areas, including evaluation of vegetative deterioration and soil erosion.

C) Review to determine if Recreation Opportunity Guides are prepared and updated on a regular basis.

5. FREQUENCY:

Annual

6. EXPECTED PRECISION/RELIABILITY:

RIM Level 5 for all dispersed areas.

7. TIME FOR REPORTING:

Years 3, 6 and 9.

8. EVALUATION:

Compare actual use records for a five year time period to project use by Recreation Opportunity Spectrum (ROS) setting. If use exceeds 30% of projected use or 15% of areas deteriorate to condition class 3, the ID Team will evaluate and make recommendations to management.

RECREATION 2

1. ITEM MONITORED:

Developed site use, public and private sector.

2. PURPOSE:

Federal Regulation, sample output.
Forest issue related.

3. EXPECTED FUTURE CONDITION:

Future demands will meet projections made in the Plan.

4. MONITORING METHOD:

Recreation Information Management Report, Visitor Use Report, (based on District Ranger estimates and on actual count of tickets sold or other counts by private sector operators).

5. FREQUENCY:

Annual

6. EXPECTED PRECISION/RELIABILITY:

RIM level 5 for all sites except developed sites in private sector (ski areas, campgrounds, etc.) level 3.

7. TIME FOR REPORTING:

Years 3, 6 and 9.

8. EVALUATION:

Compare actual use to projected use. Average actual use for each 3 year reporting period. If actual use is under by 10% or is over by 30%, the ID Team will evaluate and Plan modification may be necessary.

RECREATION 3

1. ITEM MONITORED

Wildlife recreation use by recreation opportunity system class or wilderness opportunity spectrum class.

2. PURPOSE:

Federal regulation, sample output. Forest issue related.

3. EXPECTED FUTURE CONDITION:

Wildlife recreation use will increase by 183 percent by the end of the planning period. This, however, is within capacity for this type of use.

4. MONITORING METHOD:

Recreation Information Management Report, Visitor Use Report, (based on District Ranger field observation).

5. FREQUENCY:

Annual

6. EXPECTED PRECISION/RELIABILITY:

RIM Level 5

7. TIME FOR REPORTING:

Years 1, 5 and 8.

8. EVALUATION:

Compare actual use record for time period (1-3; 4-6; and 7-9) to projected use. If use exceeds 50% of the total projected use, evaluate.

RECREATION 4

1. ITEM MONITORED

Condition of developed sites in the public sector.

2. PURPOSE:

Prevent damage and deterioration and meet health and safety requirements.

3. EXPECTED FUTURE CONDITION:

All sites will be improved to condition class I during the period of the Plan.

4. MONITORING METHOD:

Recreation Information Management (RIM) Report, Facility Condition Inventory, (based on District Staff examination of each site and each facility using professional or technical opinion).

5. FREQUENCY:

Annual

6. EXPECTED PRECISION/RELIABILITY:

Precision of monitoring is acceptable if done by experienced personnel. Reliability and precision should be °10/°10%.

7. TIME FOR REPORTING:

Years 4 and 9.

8. EVALUATION:

During fourth and ninth year, if less than 80% of the facilities forestwide are within RIM Condition Classes I or II, the ID Team will evaluate and make recommendations to management.

RECREATION 5

1. ITEM MONITORED

Compliance with Travel Management Plan. User conflicts, public safety problems or resource damage associated with motorized or non-motorized recreation activites. Signing, enforcement, public education efforts.

2. PURPOSE

To prevent unacceptable resource damage or user conflicts and meet provisions of Forest Travel Plan.

3. EXPECTED FUTURE CONDITION

Resource damage caused by vehicles will be minimized. A wide spectrum of recreation opportunities will be provided.

4. MONITORING METHOD

A. Inspection to determine impacts on resources caused by various modes of travel. Inspection to see if user conflicts or public safety problems exist.

B. Inspection to determine if travel management signing is in place and maintained.

C. Review of enforcement program and restriction violation records.

D. Inspections will be made during summer and winter seasons.

5. FREQUENCY

Bi-annually

6. TIME FOR REPORTING

Each year

7. EVALUATION

When use or damage conflicts with management goals or lowers visual quality below objective level or if resource damage, public safety or user conflicts are present, the ID Team will make recommendations for revisions in the Travel Management Plan.

RECREATION 6

1. ITEM MONITORED

Activities or uses in Management Area 20.

2. PURPOSE

Maintain present land characteristics and semi-primitive non-motorized or motorized recreation opportunities at the Plan level.

3. EXPECTED FUTURE CONDITION

Potential wilderness characteristics will be maintained in order that the areas can be considered for multiple use or wilderness recomendation when a new plan is prepared in 10 - 15 years.

4. MONITORING METHOD

Each in-service or out-service proposal will be evaluated to insure that approval is not given to "modify" the area.

5. FREQUENCY

Project by project.

6. TIME FOR REPORTING

NEPA documents prepared for projects within or adjoining the area will be the means of reporting.

7. EVALUATION

ID Teams will evaluate projects through the NEPA process.

RECREATION 7

1. ITEM MONITORED

Trail construction, reconstruction and maintenance.

2. PURPOSE

Determine if Plan standards and guidelines are being met.

3. EXPECTED FUTURE CONDITION

Trails will be reconstructed and maintained at a level that provides public safety and travel and resource protection. Thirteen miles of new trail will be built.

4. MONITORING METHOD

Review, inspection to determine effectiveness of Trail Management Program.

5. FREQUENCY

Sample 5% annually.

6. EXPECTED PRECISION/RELIABILITY

90/90

7. TIME FOR REPORTING

Years 3, 6 and 9.

8. EVALUATION

>10% of system trails drop one condition class level.

WILDERNESS 1

1. ITEM MONITORED

Wilderness use by Wilderness Opportunity Spectrum (WOS) Class. Environmental and Social indicators for monitoring changes within each WOS class will be developed using the Limits of Acceptable Change (LAC) framework.

2. PURPOSE:

Federal Regulation, measure prescriptions and effects. Forest issue related.

3. EXPECTED FUTURE CONDITION:

Wilderness use is expected to be less than capacity on a Forestwide basis. Current use level within the transition zone (WOS) of the Wheeler Peak Wilderness is already at or near capacity while all other areas could increase use especially Columbine Hondo.

4. MONITORING METHOD:

Recreation Information Management Report, Visitor Use Report, (based on District Ranger estimates).

5. FREQUENCY:

Annual

6. EXPECTED PRECISION/RELIABILITY:

±20%/±20%

7. TIME FOR REPORTING:

3rd, 6th and 9th year

8. EVALUATION:

Compare actual use record for a 5 year time period to projected use for each wilderness (4). If use exceeds 30% of total projected use or limits of acceptable change exceed tolerance levels, ID Team will evaluate and make recommendations on restrictions of use or Plan modification.

WILDERNESS 2

1. ITEM MONITORED

Miles of wilderness trail reconstruction and maintenance.

2. PURPOSE:

Federal Regulations, measure prescriptions and effects. Forest issue related.

3. EXPECTED FUTURE CONDITIONS:

Wilderness use is expected to be less than capacity at 2030 on a Forestwide basis. An improved trail system within the Columbine Hondo Wilderness through reconstruction and maintenance is expected to provide a better distribution of visitor use and improve wilderness opportunities.

4. MONITORING METHOD:

Work Accomplishment Reports.

5. FREQUENCY:

Annually

6. EXPECTED PRECISION/RELIABILITY:

±5%/±5%

7. TIME FOR REPORTING:

3rd, 6th and 9th years

8. EVALUATION:

Evaluation by the ID Team will be made at the third and sixth years during the decade to insure that cumulative deviation for the decade does not vary by °25%. Plan modification may be necessary if °25% is exceeded.

SPECIAL AREAS 1

1. ITEM MONITORED

Activities or uses in Management Area 19.

2. PURPOSE

Maintain areas in accordance with the Plan.

3. EXPECTED FUTURE CONDTION

The proposed Research Natural Area (RNA) and other Special Areas will be maintained and protected.

4. MONITORING METHOD

A. Each in-service or out-service project will be evaluated to insure that the area is not adversely impacted.

B. Field investigations will be conducted to insure that uses or activities are not causing adverse impacts.

5. FREQUENCY

Project by project and annually.

6. TIME FOR REPORTING

Reporting will be in the form of NEPA documents prepared for projects within or adjoining the area and annual reports on the effects uses are having on the areas.

7. EVALUATION

ID Teams will evaluate projects through the NEPA process. ID Teams will recommend restrictions or corrective actions if inspections reveal adverse impacts on the potential RNA or endangered plants or animals.

LANDS

1. MONITORED

The completion of planned land exchanges, processing of title claims, purchases, donations, administration of special uses, memorandums of understanding, etc., processing of withdrawal reviews, property boundary location program and the acquisition of needed rights-of-ways.

2. PURPOSE:

To meet other program output needs (timber sales, range projects, recreation operations etc.) and to meet the needs of other agencies, private parties and corporations.

3. EXPECTED FUTURE CONDITION:

The conditions to be monitored will be dictated by individual projects, applications, annual programs etc.

4. MONITORING METHOD:

The lands programs will be monitored through a combination of the following: A) the MAR system, B) the quality control systems implemented for the individual projects, C) Periodic field examinations by Forest Staff personnel, and D) the Activity Review System.

5. FREQUENCY:

The monitoring program will be a continuing program with annual data collection for the individual components being dictated by the established systems or the individual project quality control plans.

6. EXPECTED PRECISION/RELIABILITY:

Many of the established systems will monitor the results of the program with a high degree of precision while the precision for other items such as special use administration, are unquantifiable. Reliability is estimated °25.

7. TIME FOR REPORTING:

Every 5 years.

8. EVALUATION:

The ID Team will evaluate the reports in the 5th year to determine need for changes.

SOIL & WATER 1

1. ITEM MONITORED

Productivity of the land as represented by watershed condition inventory.

2. PURPOSE:

Federal regulation, measure effects of management.

3. EXPECTED FUTURE CONDITION:

Direct and indirect methods to improve unsatisfactory watershed conditions on 25,000 acres by 2020. As a result of this change, productivity of the land is expected to improve.

4. MONITORING METHOD:

Sampling of percent ground cover as specified in Terrestrial Ecosystem Survey Handbook, chapter 8. Samples will be taken randomly within the forest. Each point sampled can fall into one of two classes (a) unsatisfactory watershed condition or (b) satisfactory or better watershed condition.

5. FREQUENCY:

Three times per decade 3rd, 6th and 9th years of second decade.

6. EXPECTED PRECISION/RELIABILITY:

±15%/±15%

7. TIME FOR REPORTING:

At the end of the 3rd, 6th, and 9th years beginning with the second decade.

8. EVALUATION:

Improvement in trend must be within 50% of predicted change by the end of the first decade. Variance will require evaluation by the ID Team and recommendations to management.

SOIL & WATER 2

1. ITEM MONITORED

Water quality standard.

2. PURPOSE:

To assure compliance with New Mexico State water quality standards.

3. EXPECTED FUTURE CONDITION:

Production of water from forest lands will meet State water quality standards.

4. MONITORING METHOD:

Established Best Management Practices (i.e., seeding disturbed areas, water barring roads, etc.) will be checked for implementation on the ground by designated qualified personnel.

5. FREQUENCY:

Annually, one project will be monitored.

6. EXPECTED PRECISION/RELIABILITY:

±20%/±10%

7. TIME FOR REPORTING:

At the end of each year.

8. EVALUATION:

Failure to implement 100% of the required best management practices in a timely manner will require evaluation by the ID Team.

SOIL & WATER 3

1. ITEM MONITORED

Road design, construction, maintenance and density.

2. PURPOSE

To assure that Best Management Practices (BMP's, see definition in EIS glossary) are implemented in all phases of road design, construction, and maintenance to minimize erosion and maintain on-site productivity and water quality. Also to assure that density is not exceeded.

3. EXPECTED FUTURE CONDITION

A more environmentally acceptable road system.

4. MONITORING METHOD

Forest hydrologist or soil scientist will be involved in the review of one or more road projects each year including plan-in-hand, final inspection, and maintenance plans for monitoring of implementation of BMP's in all phases of the life of a road.

5. FREQUENCY

Annually, one road construction/reconstruction project will be monitored and one road maintenance project would be reviewed.

6. EXPECTED RELIABILITY

± 20%

7. TIME FOR REPORTING

At the end of year, annually.

8. EVALUATION

If after evaluation reasonable BMP's are being omitted from road construction/reconstruction projects then the reviewer will recommend corrective action. This may warrant changes in design and construction standards for this project and similar proposed projects in the future. Additional standards and guidelines in the plan may need to be added or revised.

RIPARIAN 1

1. ITEM MONITORED

Attainment condition of riparian areas with respect to the standards and guidelines for Management Area 14. (Guidelines for aquatic resource decision variable 080, activity C01). This is to be done after condition is established in first decade, probably the first year of the decade.

2. PURPOSE

The purpose of monitoring the riparian area are two fold (1) to determine the response in riparian condition resulting from the implementation of the standards and guidelines (2) Monitor the activities and uses to insure they are within the Standards and Guidelines.

3. EXPECTED FUTURE

Condition of riparian areas is expected to improve through direct treatment and improved resource management. This will indirectly benefit fish and wildlife habitat diversity, water quality, and water oriented dispersed recreation.

4. MONITORING METHOD

Review all activities during the year that took place within riparian management area. In the third and eighth years of the second decade an inventory will be conducted on 10% of those areas that were determined to be in unsatisfactory condition and 10% of those areas that were determined to be in satisfactory condition from the inventory conducted in the first decade. The intent is to determine what the effects of heavy use and management are on the riparian.

5. FREQUENCY

Annually, review all activities that took place in the riparian zone and in third and eighth years of second decade conduct an inventory on 10% of those areas that were in unsatisfactory condition and 10% of those areas in satisfactory condition.

6. EXPECTED PRECISION/RELIABILITY

± 10%/±10%

7. TIME FOR REPORTING

Annually, report all activities that took place in the riparian management area. In the third and eighth years inventory and prepare report on 10% of unsatisfactory areas and 10% of satisfactory areas.

8. EVALUATION

What is the trend in the amount of activities and what is the impact on the condition of the riparian. Are unsatisfactory areas improving? If not what changes in management need to be made. Are satisfactory areas remaining so. If not, why not. Are changes in management necessary?

PROTECTION 1

1. MONITORED"

Compliance with state health and sanitation codes to protect public health. All potable water systems open to public use will be monitored.

2. PURPOSE:

Federal regulation, sample service.

3. EXPECTED FUTURE CONDITION:

All public potable water supplies will be in compliance with the Safe Drinking Water Act and applicable state laws. Waste water treatment will comply with state laws.

4. MONITORING METHOD:

Standard bacteriological sample taken on each site by District personnel with a licensed lab doing the analysis.

5. FREQUENCY:

Varies according to site use. Frequency is specified by FSM 7400, by State law, and Federal regulation.

6. EXPECTED PRECISION/RELIABILITY:

±2%/±5%

7. TIME FOR REPORTING:

Annually

8. EVALUATION:

Compare compliance in terms of acceptable reports and system shutdowns with projected trend. If variance exceeds ±20%, the ID Team will make an evaluation.

PROTECTION 2

1. ITEM MONITORED:

Fire suppression effectiveness.

2. PURPOSE:

Federal regulation, measure prescription and effects.

3. EXPECTED FUTURE CONDITION:

Fire risk will increase if the projected increase in population is realized. This coupled with the fact that protection and suppression costs are held constant during the planning period (to 2030), increases the potential for catastrophic fires.

4. MONITORING METHOD:

a) Periodic inspections and reviews by specialists to determine if fire control organization is effective in controlling fire losses within acceptable limits.

b) Fire reviews of selected fires.

5. FREQUENCY:

Periodic as needed.

6. EXPECTED RELIABILITY:

Visual observation °40%

7. TIME FOR REPORTING:

Fifth year

8. EVALUATION:

Periodic evaluation will be made to determine if the fire suppression organization is insuring compliance with a minimum of 80% of standards and guidelines applied on 90% of fires.

PROTECTION 3

1. ITEM MONITORED

Growth reduction and mortality caused by insect and disease infestations.

2. PURPOSE:

Meet Federal regulation, ensure destructive insect and disease organisms do not increase to potentially damaging levels following management activities.

3. EXPECTED FUTURE CONDITION:

Timber management activities are not expected to result in introduction of new insect or disease problems or spread of existing endemic condition. Insect populations on the grasslands are cyclic and can be controlled as needed. Monitoring of insect and disease levels will provide information necessary to determine future impacts.

4. MONITORING METHOD:

Integrated Pest Management aerial observation by R.O. entomologists, compartment exam, project inspections and reviews.

5. FREQUENCY:

Annually.

6. EXPECTED PRECISION RELIABILITY:

±40%, ±30%

7. TIME FOR REPORTING:

Annual

8. EVALUATION:

Data will be evaluated to determine if insect and disease problems resulted from management practices. An evaluation of significance will be made by the ID Team. If potentially damaging, the ID Team will modify management prescriptions.

PROTECTION 4

1. ITEM MONITORED

Law enforcement effectiveness.

2. PURPOSE:

Forest issue related.

3. EXPECTED FUTURE CONDITION:

Law enforcement efforts by the Forest Service, and aided by cooperative agreements with local sheriffs' departments, are adequate and commensurate with the goods and services produced on the Forest and Grasslands.

4. MONITORING METHOD:

Professional evaluation of trend based on a review of case loads, solution rates and public compliants. The evaluation will be based specifically on a review of 1) protection of cultural resources; 2) changes in ORV damage; 3) changes in fuelwood theft; 4) changes in the dollar cost of vandalism; 5) trends in user protection; and 6) recurrent law enforcement problems at developed recreation sites.

5. FREQUENCY:

The LEMAR System is updated monthly.

6. EXPECTED RELIABILITY:

±15%

7. TIME FOR REPORTING:

Every 3 years.

8. EVALUATION:

The Forest Law Enforcement Coordinator will review the data and form a professional opinion about how effectiveness is changing. Any increase in violations of 40% or more in a specific area of concern will require an evaluation.

Data in the LEMAR System will be reviewed and used as a data base for formulation of a professional opinion.

PROTECTION 5

1. ITEM MONITORED:

Project generated fuel treatment.

2. PURPOSE:

Federal regulation, measure prescriptions and effects.

3. EXPECTED FUTURE CONDITION:

Fuel treatment will follow the various timber activities as a means of reducing fire hazard and insect and disease potential.

4. MONITORING METHOD:

District will maintain a fuel treatment atlas and record areas treated. Data is generated from field personnel who monitor and/or direct fuel treatment by Forest Service crews, logging companies, contractors, etc.

5. FREQUENCY:

Annual

6. EXPECTED RELIABILITY:

±15%

7. EVALUATION:

Evaluation will be made if 80% of fuels are not being treated within 2 years of creation.

5. MONITORING PLAN

PROTECTION 6

1. ITEM MONITORED

Visibility conditions in Class I area wilderness areas - Wheeler Peak.

2. PURPOSE:

Determine baseline condition of visibility and determine if any visibility degradation is occuring in the Class I areas.

3. EXPECTED FUTURE CONDITION:

Class I areas will retain good visibility to meet Class I standards. Visibility will be retained in form, line, texture and color of characteristic landscapes.

4. MONITORING METHOD:

Automated camera system and additional particulate sampling.

5. FREQUENCY:

Slides taken 3 times daily per monitoring site. Particulate data collected on opportunity basis.

6. EXPECTED RELIABILITY:

±10%

7. TIME FOR REPORTING:

Annually.

8. EVALUATION:

If form, line, texture, and color of characteristic landscape is not clearly distinguishable from middle ground, the ID Team will evaluate and make recommendation to management on the severity of degradation. The limit of acceptable change will be documented.

TIMBER 1

1. ITEM MONITORED:

Silvicultural assumptions and practices.

2. PURPOSE:

Federal regulation;

Ensure that:
-- rotation age and CMAI assumptions are correct,
-- silvicultural prescriptions follow management areas standards,
-- silvicultural prescriptions precede vegetative treatments,
-- silvicultural prescriptions are practical and achieve desired results.

3. EXPECTED FUTURE CONDITION:

Achieve a more balanced age class distribution, appropriate growing stock levels, appropriate rotations, and provide wildlife habitat and other resource needs.

4. MONITORING METHOD:

Stand data base reports;
Timber Management Information system;
silvicultural prescriptions; EA's; Staff field reviews of 5% of treatment projects.

5. FREQUENCY:

Annual.

6. EXPECTED RELIABILITY:

±10%

7. TIME FOR REPORTING:

Every 5 years (years 5 and 10)

8. EVALUATION:

Evaluation will be made if planned treatment varies more than 25% from schedule at 5 year intervals.

5. MONITORING PLAN

TIMBER 2

1. ITEM MONITORED:

Timber assumptions: volume, productivity, Management Area descriptions, acres harvested.

2. PURPOSE:

Ensure that:
-- board foot/cubic foot ratios are correct,
-- Volume/acre yield is correct;
-- Management area descriptions are correct,
-- schedule of acres harvested is correct,

3. EXPECTED FUTURE CONDITION:

Timber plans and projections support a sustained yield of forest products and achievement of multiple-resource objectives.

4. MONITORING METHOD:

Sale review, EA's, cruise summaries, TMIS, compartment exams, stand data base, (Use the same conversion ratios as used in Plan calculations).

5. FREQUENCY:

Annual.

6. EXPECTED PRECISION/RELIABILITY:

±20%

7. TIME FOR REPORTING:

Annual reports will be evaluated 5th & 10th years.

8. EVALUATION:

If treatments or measured outputs vary from projections/assumptions by more than ± 25% the I.D. team will evaluate the effect on Forest Plan objectives and the need for Plan modification.

TIMBER 3

1. ITEM MONITORED

Net sawtimber and products offered.

2. PURPOSE:

Meet Federal regulation, measure output; assure allowable sale quantity is not exceeded.

3. EXPECTED FUTURE CONDITION:

Annual sale offerings will be made on a sustained yield basis.

4. MONITORING METHOD:

PAMARS or other annual reporting systems and programmed harvest reports.

5. FREQUENCY:

Annually.

6. EXPECTED PRECISION/RELIABILITY:

±10%

7. TIME FOR REPORTING:

Annually.

8. EVALUATION:

Evaluations will be made at 3rd and 6th years of the decade to insure that cumulative deviation for the decade does not exceed the allowable sale quantity or fall below 90% of the ASQ. Noncompliance will require evaluation by the ID Team.

TIMBER 4

1. ITEM MONITORED:

Cords of fuelwood made available.

2. PURPOSE:

Federal regulation, measure output of a Forest related issue.

3. EXPECTED FUTURE CONDITION

Green wood sales will continue on a sustained yield basis. Dead/dry firewood will continue to be available through timber-sale residue and natural mortality.

4. MONITORING METHOD:

Review annual total of firewood sale reports, total firewood advertised but not sold, free use, and administrative or other use.

5. FREQUENCY:

Annual

6. EXPECTED RELIABILITY:

±25%

7. TIME FOR REPORTING:

Annual reporting, evaluation after 5th year.

8. EVALUATION:

Compare total cords made available to the projected output. If variation exceeds more than 20%, the ID Team will evaluate.

TIMBER 5

1. ITEM MONITORED

Size of openings and other harvest areas.

2. PURPOSE:

Federal regulation; compliance with Regional Guide; and to insure stand size of other harvest areas is appropriate.

3. EXPECTED FUTURE CONDITION:

Wildlife habitat will be improved through timber harvest by manipulation of stand sizes, methods of cut, and juxtaposition of stands.

4. MONITORING METHOD:

EA's presale and administrative reviews, and postsale reviews/Project area.

5. FREQUENCY:

Annually.

6. EXPECTED PRECISION/RELIABILITY:

±10%

7. TIME FOR REPORTING:

Years 3, 5 and 7.

8. EVALUATION:

Size limits will be revaluated if unacceptable results were found by an I.D. Team Review.

TIMBER 6

1. ITEM MONITORED

Practices and assumptions.

2. PURPOSE:

Federal regulation to ensure that: Regeneration is obtained within 5 years after final harvest cut, and scheduled planting is accomplished.

3. EXPECTED FUTURE CONDITION:

All lands harvested for timber production as part of the allowable sale quantity are adequately restocked within 5 years after final harvest.

4. MONITORING METHOD:

Annual Reforestation/TSI needs report, plantation survival surveys, silvicultural prescriptions, postsale administrative review, Timber Management Information System (TMIS), Stand Data Base/Acres.

5. FREQUENCY:

Annually. Plantation survival surveys are completed after the 1st and 3rd growing seasons, stocking surveys after the 3rd and 5th growing seasons, or as scheduled.

6. EXPECTED PRECISION/RELIABILITY:

±10%/±10%

7. TIME FOR REPORTING:

Annual

8. EVALUATION:

If planned accomplishment varies 25% from schedule at 8-year intervals, the ID Team will evaluate.

TIMBER 7

1. ITEM MONITORED

Re-evaluation of unsuitable timber lands

2. PURPOSE:

Evaluate the accuracy of suitable timberlands classification. Meet Federal regulations to periodically re-examine lands identified as not suited for timber production to determine if they have become suited and could be returned to timber production.

3. EXPECTED FUTURE CONDITION:

Land classification will be appropriate.

4. MONITORING METHOD:

1) Review new or updated soil survey data.
2) Review development of better technology for regeneration establishment.
3) Stand exams
4) Timber inventory and planning results.

5. FREQUENCY:

Approximately 1/10th of the Forest reviewed each year with final review and determination made when the Plan is revised.

6. EXPECTED PRECISION/RELIABILITY:

±10%/±20%

7. TIME FOR REPORTING:

As part of revised Forest Plan, or the tenth year of the decade.

8. EVALUATION:

The data monitored will be used as the basis for an evaluation to determine which lands are suited to timber production.

MINERALS

1. ITEM MONITORED

Management of the minerals activities: Environmental Assessments, bonds, bond justifications, response times for applications and plans of operations, quality of resource coordination, field checks for compliance of the terms of the operating plans, reasonableness of resource protection requirements, mineral sales program, pit plans, accountability, documentation, and reclamation.

2. PURPOSE:

To meet the requirements of the law, regulations, contract obligations, fiscal accountability, protection of surface resources, and successful reclamation.

3. EXPECTED FUTURE CONDITION:

The expected future conditions should be specified in the documentation of the approval of the activity, project, lease, sale, etc.

4. MONITORING METHOD:

The mineral program will be monitored through a combination of the MAR data reporting system, systems designed for individual project quality control, field examinations by Forest Staff personnel and the Activity review system.

5. FREQUENCY:

The monitoring program will be a continuing program with the annual frequency established by existing systems, project quality control plans and the Forest Review schedule.

5. MONITORING PLAN

6. EXPECTED PRECISION/RELIABILITY:

±20%/±10%

7. TIME FOR REPORTING:

4th year of each decade

8. EVALUATION:

Examine one project annually. The ID Team will evaluate the report in the 4th year to determine need for change in direction.

RANGE 1

1. ITEM MONITORED:

Action is being taken to bring unsatisfactory ranges to satisfactory condition.

2. PURPOSE:

Federal regulation.
Forest issue related.

3. EXPECTED FUTURE CONDITION:

Increasing management intensity levels, constructing structural range improvements, adding nonstructural range improvements.

4. MONITORING METHOD:

Grazing Statistical Report as updated from allotment analysis data.

5. FREQUENCY:

Annual

6. EXPECTED PRECISION/RELIABILITY:

±10%/±25%

7. TIME FOR REPORTING:

10 years

8. EVALUATION:

If the number of acres in satisfactory condition is not within ⁺40% of the predicted level, an evaluation will be made by the ID Team.

RANGE 2

1. ITEM MONITORED

Range condition and trend

2. PURPOSE:

Forest issue related

3. EXPECTED FUTURE CONDITION:

Range conditions will be improved at 2030 by decreasing unsatisfactory range to 68,883 acres; and increasing satisfactory range 753,244 acres.

4. MONITORING METHOD:

Range Analysis conducted per R-3 standards by qualified Range Conservationists.

5. FREQUENCY:

Annual

6. EXPECTED PRECISION/RELIABILITY:

±20%/±20%

7. TIME FOR REPORTING:

Year 10.

8. EVALUATION:

If the number of acres with satisfactory condition and upward or stable trend is not within ±40% of that scheduled, the ID Team will evaluate.

5. MONITORING PLAN

RANGE 3

1. MONITORING METHOD:

   New or revised range management plans

2. PURPOSE:

   Forest issue related

3. EXPECTED FUTURE CONDITION:

   Prepare or update grazing allotment or unit management plans on 75 percent of the National Forest allotments.

4. MONITORING METHOD:

   PAMARS

5. FREQUENCY:

   Annual

6. EXPECTED PRECISION/RELIABILITY:

   ±5%/±5%

7. TIME FOR REPORTING:

   Every 5 years (years 5 and 10)

8. EVALUATION:

   If the number of updated plans is 30% below the projected level, the Forest ID Team will evaluate.

RANGE 4

1. ITEM MONITORED:

   Range development

2. PURPOSE:

   Federal regulation, sample prescription and effects.
   Forest issue related.

3. EXPECTED FUTURE CONDITION:

In order to move toward balancing range use with capacity the structural and nonstructural improvements will be added or reconstructed based on the allotment management plans and funding levels.

4. MONITORING METHOD:

Data on completed range improvements (fences, waters, revegetation, etc.) can be tracked through the existing RAMIS system and the annual grazing statistical report.

5. FREQUENCY:

Annual

6. EXPECTED RELIABILITY:

±10%

7. TIME FOR REPORTING:

Every 5 years (years 5 and 10)

8. EVALUATION:

Evaluate every 5 years. Accomplishment of 75% or less of planned improvements will require evaluation by the ID Team.

RANGE 5

1. ITEM MONITORED:

Permitted use

2. PURPOSE:

Federal regulation, sample output.
Forest issue related.

3. EXPECTED FUTURE CONDITION:

Through increased management and additional structural and nonstructural range improvements, range capacity is expected to increase from the present 119,000 AUM's to 136,000 AUM's in the fifth decade.

4. MONITORING METHOD:

Data generated from grazing permits and displayed in Grazing Statistical Report.

5. FREQUENCY:

Annual

6. EXPECTED PRECISION/RELIABILITY:

±5%/±5%

7. TIME FOR REPORTING:

Every 5 years (years 5 and 10)

8. EVALUATION:

Evaluate at 5 year intervals. Evaluate by ID Team if permitted use varies °10% from the predictions.

RANGE 6

1. ITEM MONITORED:

Grazing capacity

2. PURPOSE:

Federal regulation, sample output.
Forest issue related.

3. EXPECTED FUTURE CONDITION:

Grazing capacity is expected to exceed permitted use through the fifth decade.

4. MONITORING METHOD:

Annual grazing statistical report, which is updated with new analysis data.

5. FREQUENCY:

Annual

6. EXPECTED PRECISION/RELIABILITY:

±5%/±20%

7. TIME FOR REPORTING:

Every 5 years (years 5 and 10)

8. EVALUATION:

Evaluate at 5 year intervals to determine rate in meeting expected capacity. Evaluate by the ID Team if 20% below anticipated capacity.

COSTS

1. ITEM MONITORED:

Costs

2. PURPOSE

Federal regulation

3. EXPECTED FUTURE CONDITION:

4. MONITORING METHOD:

Annual PAMARS reporting system

5. FREQUENCY:

At end of each fiscal year.

6. EXPECTED PRECISION/RELIABILITY:

±20%+

7. TIME FOR REPORTING:

Annual at close of each fiscal year.

8. EVALUATION:

±50%, an evaluation will be made.

CULTURAL RESOURCES 1

1. ITEM MONITORED:

Degree of protection of cultural resources

2. PURPOSE:

Protection of cultural resources

3. EXPECTED FUTURE CONDITION:

All National Register eligible resources protected from project-derived ground-disturbing activities and from willfull or negligent damage, including vandalism and recreation.

4. MONITORING METHOD:

Conduct sample inspections of project areas for ten percent of all in-service projects, ten percent of all out-service projects under 100 acres in size and all out-service projects over 100 acres in size.

Identify recreation impacts to cultural properties and establish test sites and inspection schedules to monitor site conditions.

In cooperation with Forest and Zone law enforcement, identify areas and properties with high probability for vandalism. Provide support to law enforcement as required.

5. FREQUENCY:

A professional cultural resources specialist will visually inspect every significant cultural resource identified on the Forest a minimum of once a year. District personnel will monitor more frequently, as opportunities present themselves.

6. EXPECTED PRECISION/RELIABILITY:

This is an area of great subjectivity. Expected precision and reliability will vary on a case-by-case basis. It is a relatively simple task to see and document the advance of an erosional gully toward an archeological site. It is much more difficult to accurately estimate the loss of or damage to cultural resources by natural or human agents - moderate reliability.

7. TIME FOR REPORTING:

Project by project.

8. EVALUATION:

No ground disturbing resource activities will be permitted until an archeological clearance survey is completed and mitigating requirements developed. Protective actions will be undertaken if vandlism or recreational activities threaten site integrity.

VISUAL QUALITY

1. ITEM MONITORED:

The effect of management activities on acres of visual quality objectives.

2. PURPOSE:

Federal Regulations, measure prescriptions and effects.

3. MONITORING METHOD:

The Visual Resource Management System will be used as a basis of the monitoring activity.

4. FREQUENCY:

4th and 9th year

5. EXPECTED PRECISION/RELIABILITY:

±10%/±10%

6. TIME FOR REPORTING:

4th and 9th year

7. EVALUATION:

If visual quality objectives acres in Retention or partial Retention is reduced 20%, the ID Team will evaluate and make recommendations to management.

VISUAL QUALITY 2

1. ITEM MONITORED

Visual quality levels.

2. PURPOSE

Ensure Forest standards and guidelines for visual management are met.

3. EXPECTED FUTURE CONDITION

Visual Quality levels will be maintained or enhanced.

4. MONITORING METHOD

Projects involving vegetative treatment or manipulation, road or trail construction and major development will be evaluated through the NEPA process to enhance or maintain visual quality levels.

5. FREQUENCY

Project by project.

6. EXPECTED PRECISION/RELIABILITY

80/80

7. TIME FOR REPORTING

NEPA documents will make up the reports.

8. EVALUATION

Projects that reduce visual quality levels will require Landscape Architect evaluation.

FOREST PLAN IMPLEMENTATION

1. ITEM MONITORED

Forest Plan mission, goals, objectives, and standards and guidelines.

2. PURPOSE

To assure compliance with and implementation of the Carson Forest Plan in accordance with its stated mission, goals, objectives, and standards and guidelines. This will be done enlight of funding or any other constraints.

3. EXPECTED FUTURE CONDITION

Completion of Forest Plan objectives at the quality level specified by the standards and guidelines. All done under the general guidance of the mission and goals.

4. MONITORING/EVALUATION

A monitoring action program will be prepared each year.

5. FREQUENCY

Annually.

6. EXPECTED PRECISION/RELIABILITY

+1-15%

7. TIME FOR REPORTING

Years 1-10