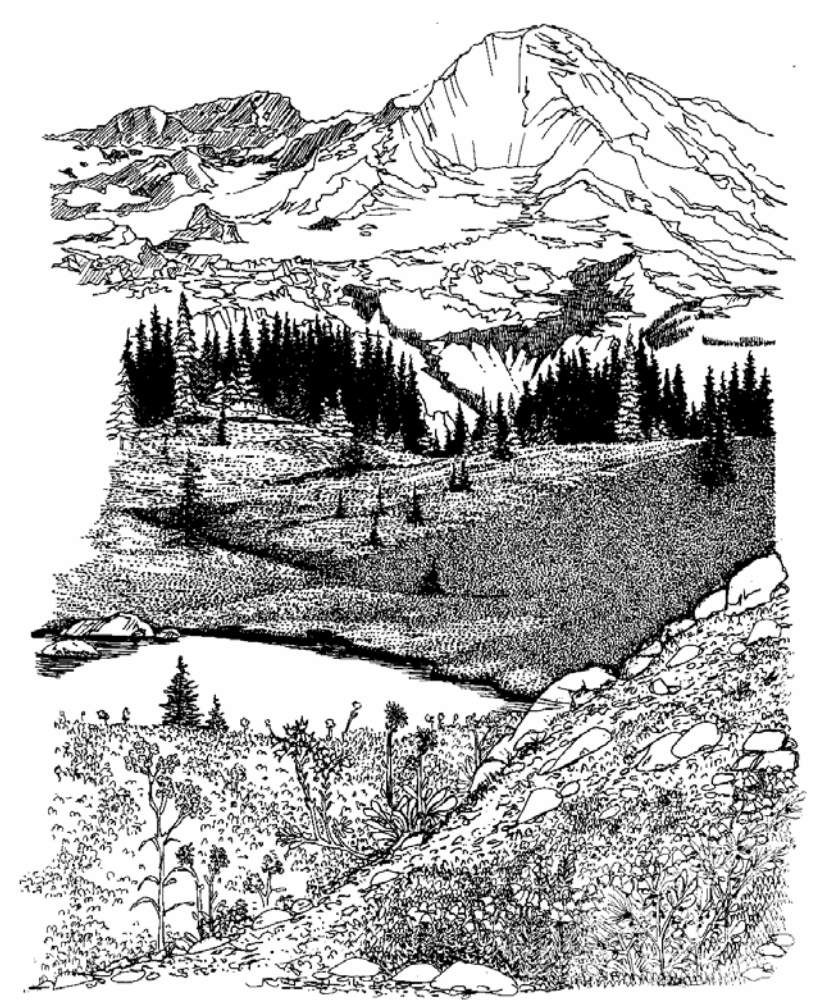
ROUTT NATIONAL FOREST

LAND AND RESOURCE MANAGEMENT PLAN
1997 REVISION

ANNUAL MONITORING AND EVALUATION REPORT
FISCAL YEAR 2002



EXECUTIVE SUMMARY

The purpose of this report is to evaluate and document the results of implementing the Routt National Forest Land and Resource Management Plan (*1997 Revision)* during Fiscal Year 2002. This report compares actual outputs and services with those estimated in the Revised Plan. It also evaluates data in relation to output trends or environmental effects and identifies any needed changes in Plan direction or project implementation. The results of monitoring helps to determine if there is a need to amend or revise the Plan, and also identifies any potential research needs.

The results of monitoring indicate that implementing the Forest Plan Standards and Guidelines and applied Best Management Practices (BMP's) has resulted in acceptable water quality, soil productivity, and watershed health. Maintaining adequate habitat to protect threatened, endangered, and Region 2 sensitive wildlife species is also being accomplished.

Forest Plan monitoring efforts continue to focus on the impacts of the October 1997 windstorm, which damaged more than 20,000 acres of forested land in the vicinity of the Mt. Zirkel Wilderness. Forest management activities continue to be focused on addressing the effects of that event. Since the occurrence of the 1997 blowdown, it appears that spruce bark beetle populations are increasing and spreading at a faster rate than was originally predicted, which is of interest to researchers. In addition, there appears to be a widespread decline in the health of subalpine fir stands. The Bark Beetle Analysis (Environmental Impact Statement), which was initiated to address these problems, describes alternative actions for treating the infestations. Three Records of Decision approving the beetle treatment activities have been signed.

There are four areas of monitoring that indicate a need for change in management practices:

- There is a need to improve range allotment management within riparian areas on the Forest. New practices have been developed and will be incorporated into permits as they are renewed.
- Within five years after timber harvest, the sites need to be reforested to the Standards in the Forest Plan. More than 95 percent of the acres harvested on the Forest meet that requirement. The areas that do not meet that standard will be planted and monitored in the future to ensure that all areas are fully stocked.
- Monitoring the efforts of volunteers and partnerships needs to be done, along with other entities that help manage the recreation program. The methods of measuring and reporting these activities need to be improved.
- Review and update the 1997 watershed health assessment to incorporate the new watershed boundaries and hydrologic unit code numbers, the new watershed condition class definitions, and changes in disturbance levels due to natural processes, as well as management induced effects.

The Forest Interdisciplinary Team did not identify the need to amend or revise the Forest Plan for any of the monitoring items at this time.

Introduction

The purpose of this report is to evaluate and document the results of Forest Plan monitoring that was performed during Fiscal Year 2002. As a result of this monitoring, the Interdisciplinary (ID) Team may make recommendations to the Forest Supervisor concerning the adequacy of the Forest Plan for providing direction to manage the Routt National Forest. Monitoring activities were accomplished by the ID Team and other Supervisor's Office and District resource specialists.

The Revised Routt National Forest Land and Resource Management Plan was approved on February 17, 1998, when Acting Regional Forester Tom L. Thompson signed the Record of Decision. The Monitoring Evaluation Report for Fiscal Year 2002 includes activities that were performed between October 1, 2001 and September 30, 2002. The ID Team made an effort to monitor projects that were developed and implemented in accordance with the revised Forest Plan Standards and Guidelines.

On October 25, 1997, an intense windstorm occurred along the west boundary of the Mount Zirkel Wilderness, north of Steamboat Springs, Colorado. This event, which is referred to as the Routt Divide Blowdown (blowdown), caused extensive windthrow to Engelmann spruce, subalpine fir, and lodgepole pine trees on approximately 7,600 acres within the Mount Zirkel Wilderness, and an additional 5,300 acres outside the wilderness. The Forest assembled an Interdisciplinary Team to analyze the effects of the blowdown and to develop appropriate courses of action. On July 17, 1998, the Record of Decision (ROD) for the North Fork Salvage Analysis Final Environmental Impact Statement (FEIS) was signed, which initiated a series of salvage sale operations designed to rehabilitate the affected area.

Most of the monitoring accomplished during the 2002 field season was related to evaluating the effects of the Routt Divide Blowdown. This included verifying the assumptions made in the North Fork Salvage Analysis FEIS, identifying the effects of the salvage operations, and determining the effectiveness of the mitigation measures that have been implemented. Monitoring also reviewed the effectiveness of several modifications to the Best Management Practices (BMP's), as well as the application of specific mitigation measures developed for the blowdown, which may have broader applications across the Forest.

This report summarizes observations made by the ID Team and compares the accomplishment of specific measurable targets with the outputs predicted in Table S-2 of the Forest Plan FEIS (1997 Revision). Monitoring implementation of the Forest Plan will evolve from year to year as issues change and more experience is acquired. According to the Revised Plan, monitoring focuses on identifying and analyzing the effects of project implementation, which may result in refining Forest Plan direction when necessary.

Overview of Monitoring: Conclusions and Recommendations

The ID Team did not identify any items that would generate an immediate need to change the Forest Plan. However, there may be a need to alter implementation methods, as well as several other topics that could result in non-significant amendments in the future. The ID Team has identified a need for research to discover the factors that are causing the decline of subalpine fir and develop management strategies to address those effects. As a result of monitoring during 2002, the ID Team concluded that the Forest Plan is sufficient for managing the Routt National Forest.

Aerial surveys completed during recent years have indicated an increase in insect and disease activity consistent with the aging conditions of the forest. Damage and mortality due to disturbances such as windstorm, fire, and forest pests are escalating. While this is to be expected on the portion of the forest with low management intensity (wilderness areas, etc.), large-scale damage could adversely affect outputs and management options for the rest of the Forest that is managed more intensely.

Special emphasis needs to be placed on continued monitoring of spruce bark beetle populations within the Routt Divide Blowdown and surrounding areas. Even though the blowdown that occurred during the fall of 1997 created a very large acreage of optimal habitat for the beetles, numerous smaller areas in other high-risk stands could also trigger a spruce beetle epidemic. Monitoring completed during 2002 has led entomologists to a confident conclusion that an epidemic well underway. This growing epidemic has the potential to significantly change the characteristics of the spruce-fir vegetation type on the Forest, which may also cause long-term impacts to the other resources.

Populations of mountain pine beetles on the Routt National Forest are also continuing to escalate at dramatic rates, as evidenced by intense outbreaks in several small timber stands across the Forest. Insect activity and other effects of the Routt Divide Blowdown will continue to be the focus of monitoring on the Forest during the next several years.

Responses to the Monitoring Questions

The Monitoring Questions listed in Chapter 4 of the Forest Plan respond to regulatory requirements and the Goals and Objectives stated in Chapter 1 of the Plan. They were designed to help determine how well the Forest Plan is being implemented. Several Monitoring Questions, however, do not require annual evaluation and reporting. In response to these questions, a note identifies the year that an analysis and evaluation will be reported. These questions involve information that will require several years for any trends to become discernable and established. Where data is displayed, but no analysis is completed, the information was collected to ensure that it will be available according to the monitoring schedule.

The information presented here is summarized from specialist reports compiled as part of the FY 2002 monitoring effort. The evaluations and recommendations submitted to the Forest Supervisor were prepared by the Monitoring ID Team and are on file at the Forest Supervisor's Office.

Monitoring Question 1-1: Are long-term soil health and productivity being maintained?

During 2002, soil resource monitoring was performed throughout the Forest. This work served two main purposes: (1) continued testing of the Region 2 Soil Health Assessment Protocol, and (2) to provide additional effectiveness monitoring for the Forest soils program. Also, this was the second year for using an integrated approach to evaluate the physical characteristics of riparian and stream conditions, together with riparian soil health, riparian surveys, and physical stream surveys. As a result of wildfires during 2002, monitoring was initiated in some of the burned areas. Soil resource monitoring included the following activities:

- BMP and mitigation monitoring for projects.
- Erosion bridges.
- Ground-cover transects.
- Respiration sampling to determine the effects of activities on soil microbial populations.
- The effectiveness of Sub-soiling to address soil compaction in the California Park area.
- Soil Health assessment.

Soil Resource BMP and Mitigation Monitoring:

The BMP's and mitigation measures prescribed during project implementation were derived from both, the Forest Plan and Region 2 soil standards. Regional standards address soil erosion, compaction, puddling, displacement, and burning. Forest Plan standards include both, the Regional standards and the Watershed Conservation Practices Handbook guidelines. Effectiveness of the BMP's and mitigation measures that were implemented specifically to protect the soil resource are discussed in this report.

Ground Cover Transects:

Forest Plan Standards require a specified percent ground cover, which is based on the erosion class hazard

of the soil and whether monitoring occurs in the first or second year after the disturbance. The Regional Standards must be achieved within two growing seasons. These areas will be sampled again in 2003. On the whole, ground-cover results appeared to be well correlated with unit evaluations in the BMP section. Ground-cover transects were done forestwide at approximately 15 different locations. These included timber harvest areas, range allotments, and prescribed burning units. Most of these ground-cover transects will be remeasured during the 2003 field season. In addition, twenty erosion bridges were placed on hillsides that had been affected by the fires. All of these bridges will be re-measured during 2003. The Camp Creek and Long Park prescribed fires occurred in 2001. They were re-measured in 2002, and no soil erosion was identified.

Results: The amount of effective cover in all units was greater than that required by Forest Plan Standards.

Soil Microorganism Sampling:

Soil microbial populations are an important indicator of soil and ecosystem health. Grassland soils are bacteria dominated, while most shrub and forest soil ecosystems are fungus dominated. During 2002, the watershed group also measured soil respiration to determine the effect of management on the soil microbial populations. This technique is being evaluated, and if successful, will be done on other areas.

Results: The results are still being analyzed at this time by the Forest Soil Scientist.

Subsoiling:

A wing subsoiler was used to rip approxmately 200 acres in California Park area in 2001. During 2002 the soil erosion bridges were measured again, with no measurable erosion being detected. Infiltration and soil respiration were measured on the areas that were subsoiled and other areas that were not treated.

Results: The area that received the treatment had infiltration and respiration about 2 ½ times higher than the untreated areas.

Conclusion: Monitoring completed during 2002 indicates long-term soil health and productivity is being maintained. Site-specific monitoring data is on file with the Forest Soil Scientist.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendations: Continue to monitor the effects of the Zirkel and Green Creek fires. Monitor implementation of a variety of projects to determine the effects of other management activities.

Monitoring Question 1-2: Are management activities maintaining or improving air quality including the Mt. Zirkel Wilderness?

The Forest only completed one prescribed broadcast burn in April, 2002, which was the Beaver/Radium burn consisting of 120 acres on the Yampa Ranger District. The fuel type was sagebrush, which is a flashy type fuel that burns very rapid and hot, therefore, it did not produce smoke very long after initial ignition. Other prescribed burns were planned but not completed because of the warm, dry, spring

weather conditions. The weather conditions precluded additional prescribed broadcast burns because the fuels were out of prescription for burning, as identified in the Burn Plans. No smoke from the Beaver/Radium burn impacted the Mt. Zirkel Wilderness because of the location of the burn, the prevailing wind direction, the type of fuels, and the burn was conducted under good to excellent dispersal conditions.

Other fire management activities included burning piles of conifer slash left over from timber sales. The Hahns Peak/Bears Ears Ranger District burned 123 piles in the Seedhouse area and 53 piles in the Bears Ears area during the fall of 2002. Both of these locations are upwind of the Mt. Zirkel Wilderness. The Forest Service must submit burn/smoke permits for open burning to the Colorado Air Pollution Control Division. The Forest Service also completed a Burn Plan for each fire. The Burn Plan considers smoke dispersion, possible inversion conditions, nighttime down-valley airflow and how to mitigate the smoke effects of the fire if unanticipated events occur. The smoke management portion of the Burn Plan is also submitted to the State of Colorado, which must approve the Forest Service permit before burning commences. Part of the permit is to run the Simple Approach Smoke Estimation Model. Key parts of the model evaluate the appropriate meteorological conditions and the effect upon sensitive receptors, such as highways, cities, and Class I and II Wilderness Areas. Both of the pile burning activities previously mentioned were conducted during good to excellent dispersal days, which means the smoke was dispersed high into the atmosphere. Therefore, the smoke from the pile burning did not impact the Mt. Zirkel Wilderness. Additionally, each of these activities were conducted over a period of approximately two weeks, so there was a limited number of piles ignited on any one day.

The Yampa Ranger District burned 25 piles on the Gore Pass project. The Parks Ranger District had three pile burning projects (Snyder Creek, Big Creek, and Village Bell), which burned a total of 18 piles in separate locations around North Park. No smoke from these activities impacted the Mt. Zirkel Wilderness, because all of them were ignited during good to excellent smoke dispersal days, plus the prevailing winds did not blow toward the Wilderness.

Although they were not Forest Service planned management activities, the major events during the summer of 2002 were the large number of wildfires occurring on the Forest at the same time. Drought conditions and lighting-caused natural ignitions created the most severe wildfire season in the history of the Routt National Forest. Many of these fires were all burning at the same time during the summer of 2002. The following are the wildfire names, general location, and the number of acres burned:

Hinman Fire; north of Seedhouse Road on the Hahn's Peak/Bears Ears RD; 1,446 acres.

Green Creek Fire; Sarvis Creek Wilderness and non-wilderness; Yampa RD; 13,672 acres.

Lost Lakes Fire; Flat Tops Wilderness; Yampa RD; 5,538 acres.

Burn Ridge Fire; Mt. Zirkel Wilderness; Hahn's Peak/Bears Ears RD; 13,672 acres.

Hinman-Mt. Zirkel Complex Fire; just east of the Hinman Fire on the Hahn's Peak/Bears Ears RD; 16,723 acres.

Total acres burned = 44,809

The valleys surrounding Steamboat Springs and the City itself were "smoked-out" many days during the summer due to the inversion effect of all the wildfires. Looking at the PM-10 data collected by the Routt County Environmental Health Department for the State of Colorado Air Pollution Control Division at the Graseby Beta Gauge located in downtown Steamboat Springs shows some interesting conclusions. The PM-10 data is derived by filtering an air sample for those particles less than 10 micrometers in size, which may cause respiratory problems in humans. Even with all of the fire activity during 2002, the PM-10 standard for a twenty-four hour average of 150 mircrograms/cubic meter was not exceeded. The

significance of this data is that even with all of the natural smoke being produced by wildfires the standard for particulate matter was never exceeded during the entire summer wildfire season. Contrast this information to the small acreages of prescribed burning, and it is apparent that forest management activities did not contribute to degradation of air quality in the Mt. Zirkel Wilderness. This was partly due to the burning being prior to or after the natural wildfires. There was no cumulative effect.

Dust abatement treatments, such as watering the roads and fire camps or using magnesium chloride for a longer lasting affect, also reduces the amount of fugitive dust that has the potential to affect air quality in the Mt. Zirkel Wilderness. These practices were implemented on all the wildfires this past season.

Conclusion: Monitoring completed during 2002 indicates that the air quality, especially in Class I Airsheds, is being maintained. No change to the Forest Plan is needed for this item.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendations: Continue to monitor the effects of the Zirkel and Green Creek fires. Monitor implementation of other project activities to determine their effects upon air quality.

Monitoring Question 1-3: How well are management activities maintaining watersheds in a healthy condition and meeting Colorado water quality standards?

Evaluate current conditions of watersheds for compliance with State water quality standards and review State list of impaired streams: None of the streams on the Routt National Forest are impaired according to the 1998 State 303(d) list, however, there are 23 stream segments on the Forest that are on the Colorado State Monitoring and Evaluation List (M & E list) due to the effects of excess sediment. Monitoring was initiated on ten of those streams during the summer of 1998, and all streams on the M & E list have been surveyed at least once between 1998-2002. Monitoring included: 1) evaluating physical stream characteristics using pebble counts, longitudinal profiles, and cross-sections; 2) measuring riparian conditions using greenline surveys and riparian vegetation cross-sections; 3) assessing soil health using soil compaction samples, percent ground cover, and infiltration rates; 4) evaluating biological health using macroinvertebrate sampling and shocking to determine biomass; and 5) measuring basic water quality related to water temperature, pH, and dissolved oxygen. Initial evaluation of the data indicates that the water quality met the State water quality standards, however, data analysis for the other factors has not been completed. During the period 1999-2002, fourteen stream reference sections were surveyed to determine the conditions of the physical, riparian, soil, and biological factors.

During 2001, a major road and stream restoration project was implemented on Newcomb Creek, which is on the M & E list. This project will help to restore the natural stream dynamics, which were altered during construction of Forest System Road 615. Installation of a box culvert diverted Newcomb Creek to the natural channel at this stream crossing, which will help to restore the dynamic equilibrium. The environmental effects caused by this stream crossing was one of the primary reasons that Newcomb Creek had been placed on the M & E list. Visual inspection of the project area following the 2002 spring runoff found that the project was functioning as intended. Willow cuttings planted in the fall of 2001 were sprouting and helping to re-establish riparian vegetation in the disturbed areas. Additional scarification and seeding of disturbed soils was also completed in 2002 to promote revegetation. Overall,

it appears to be a successful project and the disturbed areas are recovering.

The Forest has worked closely with the Colorado Water Quality Control Division to develop a strategy for evaluating the condition of the streams in question. The 'Provisional Implementation Guidance for Determining Sediment Deposition Impacts to Aquatic Life in Streams and Rivers (June 1998) provides the primary direction for monitoring these M & E listed streams.

Evaluate disturbance level of watersheds by comparison of current conditions with 1997 Watershed Health Assessment: Several factors have changed since the 1997 Watershed Health Assessment. These include; 1) changes in delineations of the sixth-level watershed boundaries and hydrologic unit code numbers to be consistent with the NRCS national delineation protocol, 2) changes in the condition class definitions (FSM 2521.1), and 3) effects of the 2002 fires, Routt Divide blowdown, and beetle epidemics on the condition of some watersheds.

During the summer of 2002, wildfires significantly affected four sixth-level watersheds on the Routt National Forest. The greatest impacts were from the Mount Zirkel Complex wildfires, which affected a significant portion of the North Fork Elk River, Middle Fork Elk River, and Hinman Creek sixth-level watersheds. All of these watersheds lie in the Elk River fifth-level watershed. The fires burned a portion of the area affected by the 1997 Routt Divide blowdown. The combined effects of the blowdown, spruce beetle epidemic resulting from the blowdown, increased mountain pine beetle activity, and the wildfires have substantially changed conditions in these watersheds. Therefore, it is recommended that the Elk River fifth-level watershed be added to the 2002 Medicine Bow-Routt National Forests priority watershed list. The affected watersheds contain high aquatic values including eligible wild, scenic, and recreation corridors, Colorado River cutthroat trout, boreal toads, and outstanding water designation in the Mount Zirkel wilderness. The Forest was granted more than six million dollars in Burn Area Emergency Rehabilitation (BAER) funds for treatments to maintain long-term soil productivity and watershed function, and to protect downstream values in the North Fork Elk River, Middle Fork Elk River, and Hinman Creek watersheds. Based on the combined effects of the blowdown, spruce and mountain pine beetle epidemics, and Mount Zirkel Complex fires, the condition class rating in these four watersheds should be upgraded to class 3. The definitions used in the 1997 watershed health assessment were used to maintain consistency with the other sixth-level watersheds.

Other watersheds affected by the Mount Zirkel Complex fires include the South Fork Elk River and Big Creek in the Elk River fifth-level watershed, and Roaring Fork and Lone Pine Creek in the Platte River basin. The areas in the South Fork Elk River, Big Creek, and Roaring Fork watersheds affected by the fires lie primarily in the Mount Zirkel wilderness. The fire generally burned in a mosaic pattern with low severity in these watersheds, and overall would be considered a benefit to maintaining natural ecological function. The portion of the Lone Pine Creek watershed affected was relatively small. The Burn Area Emergency Rehabilitation assessment identified aerial seeding of the Lone Pine Creek watershed area of high burn severity to minimize surface erosion during storm events, and to maintain long-term soil productivity. While the fires will increase water and sediment yields in these watersheds, it is estimated that the degree of disturbance does not warrant placing these watersheds on the priority watershed list, or significantly changing the conditions from the 1997 Watershed Health Assessment.

The Green Creek fire severely burned the headwaters of the West Fork of Frantz Creek in the Muddy Creek/Milk Creek sixth-level watershed. Land treatments including aerial mulching and seeding, while road treatments have been proposed to maintain long-term soil productivity and watershed function and also protect downstream values. Considering the effects of the Green Creek fire on these headwater reaches, including Little Green Creek, which contains Colorado River cutthroat trout, it is recommended that the Muddy Creek watershed be upgraded to condition class 3, based on the condition class definitions used in the 1997 watershed health assessment.

It should be noted that between the revision of the Routt Forest Plan during 1997 and January 2003, the

sixth-level watershed delineations have been updated to comply with NRCS national standards for watershed delineation. As a result, changes have occurred in sixth-level watershed boundaries and acreages since the 1997 Plan Revision. Due to these changes, the condition class rating and watershed health assessment from 1997 may need to be adjusted to reflect the new watershed boundaries.

It should also be noted that the watershed condition class definitions (FSM 2521.1) have changed since the 1997 Routt Forest Plan revision. The condition class ratings in the 1997 Plan reflect the old definitions. Again, there may be a need to update the watershed condition class ratings due to; 1) changes in watershed boundaries, and 2) changes in the condition class definitions.

Conclusion: Several factors suggest the need to review and update the watershed condition assessment completed for the 1997 revision. These factors include; 1) changes in delineations of the sixth-level watershed boundaries and hydrologic unit code numbers to be consistent with the NRCS national delineation protocol, 2) changes in the condition class definitions (FSM 2521.1), and 3) effects of the 2002 fires, Routt Divide blowdown, and beetle epidemics on the condition of some watersheds.

No change indicated	
Implementation change needed	
Update 1997 assessment	X

Recommendations: Review and update the 1997 watershed health assessment to incorporate the new watershed boundaries and hydrologic unit code numbers, the updated watershed condition class definitions, and changes in disturbance levels due to natural processes, as well as management induced effects. This could be completed concurrent with the Routt Forest Plan Revision five-year review.

Review projects for compliance with the effectiveness of Forest Plan water and riparian Standards and Guidelines: The fact that none of the streams on the Routt National Forest are on the 303(d) impaired list suggests that management activities have been sufficient to prevent significant water quality impacts.

Field reconnaissance for the Green Ridge Beetle Assessment included evaluation of the effects of past management activities. Specific examples include past skid trails and temporary roads. In many cases, old skid trails were left with sufficient water bars and ground cover to minimize surface erosion and delivery of sediment to the stream system. In other cases, inadequate water management on old skid trails and temporary roads resulted in excessive surface erosion and the development of gullies. These findings were used for developing site-specific mitigation measures for the Green Ridge beetle analysis project. The field reconnaissance suggested that with proper implementation of Design Criteria from the Watershed Conservation Practices (WCP) Handbook (FSH 2509.25), effects to the soil and water resources would be minimal.

Some of the 2002 monitoring focused on water-use facilities. Monitoring indicated that ditch maintenance might be insufficient to meet the Forest Plan standard of, “Manage water-use facilities to prevent gully erosion of slopes and to prevent sediment and bank damage to streams.” An inspection of the Darcy Ditch found multiple locations vulnerable to future breaches. Past breaches of the Darcy Ditch have contributed large amounts of sediment to the stream system, such as a breach in the late 1990’s that delivered large quantities to Grassy Run, which is on the Colorado State Monitoring and Evaluation list for potential impairment. Field visits to other ditches suggest that this is not an isolated situation.

Conclusion: Monitoring conducted during 2002 suggests that maintenance on water-use facilities may not be meeting Forest Plan Standards and Guidelines. It is recommended that the current process for ensuring ditch maintenance needs to be evaluated. As inventories identify maintenance needs, these needs should be incorporated into the special-use permit for that facility.

No change indicated	
Implementation change needed	X
Change to Forest Plan needed	

Recommendations: Continue to monitor the effectiveness of the Watershed Conservation Practices Handbook (FSH 2509.25) and other Forest Plan Standards and Guidelines for protecting water quality and maintaining watershed health. Work towards developing a process for including ditch maintenance needs and accomplishments in the special-use permits for these water-use facilities.

Monitoring Question 1-4 - Are insect and disease populations compatible with attainment of management area goals and objectives?

Spruce Bark Beetle:

Aerial surveys during the summer of 2002 indicated increased mortality from spruce beetle, mountain pine beetle, and sub-alpine fire decline. Losses from spruce beetle infestations increased significantly in 2002. The majority of the losses occurred in or adjacent to the Mt. Zirkel Wilderness and the Elkhead Mountains. The increased losses are the result of the physiological stress placed on host spruce trees by the continuing drought, and susceptibility of spruce to beetle attack due to reduced vigor of aging, mature, overstocked stands. The amount of area within the Routt National Forest affected by the spruce beetle is approximately 49,000 acres.

Mountain Pine Beetle:

Lodgepole pine mortality due to mountain pine beetle increased in 2002 across the Routt National Forest. Areas of increased losses are in the Green Ridge area of Jackson County, and along the lower eastern slopes of the Sierra Madre mountain range. In Routt County, the beetle mortality is widely scattered across the Routt National Forest, comprising a total of approximately 10,300 acres. The Forest Service is currently developing an Environmental Impact Statement, in order to plan for prevention, suppression, and salvage operations.

Subalpine Fir Decline:

Subalpine fir decline continues to be on the increase on the Routt National Forest. The problem affected approximately 98,000 acres in 2002. The nature of the mortality mechanism is poorly understood, but is thought to be a combination of western balsam bark beetle, a pathogenic fungus carried by the bark beetle, and a root decay pathogen. The problem has increased on the Forest during the past seven years.

Conclusion: Monitoring conducted during 2002 indicates the continued need for intensive surveys of the incidence of insect and disease damage on the Forest. No change to the Forest Plan is necessary at this

time, however. This subject will receive additional attention in the upcoming Fifth year Monitoring and Evaluation Report in 2004.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendations: Continue monitoring the spruce bark beetle and mountain pine beetle populations. The Forest needs to implement management decisions, as indicated by the Bark Beetle and Green Ridge Environmental Impact Statements, in the areas of immediate impact. The Forest also needs to implement Routt National Forest Plan Goals and Objectives, as they relate to forest health and management. Continue to coordinate with Forest Service Research to monitor impacts of these forest pests and develop and implement management strategies that reduce their impacts.

Monitoring Question 1-5: How is harvest unit size affecting landscape patterns across the Forest? (Coarse Filter Scale)

Formal evaluation for this monitoring question will not occur until Fiscal Year 2003. Information for FY 2002, however, is being included here to ensure that it is available for future evaluation. Although no formal analysis will be done until 2003, the ID Team identified some trends worth noting at this time.

A copy of the Forest's vegetation data (RIS and GIS data attributes) was archived during January, 2000. This data will serve as a baseline for the initial comparisons that will be made in the 2003 Annual Monitoring Evaluation Report.

Data showing the average and maximum size of clearcut units that were harvested during FY 2002 by Ranger District are presented in the following table. This information will be included in the baseline data for use in the 2003 analysis. The large openings caused by the Routt Divide blowdown are not included in this analysis, but they do contribute to a diversity of patch sizes across the landscape.

Ranger District	Number of Clearcut Units	Average Clearcut Size (acres)	Maximum Clearcut Size (acres)
01 Yampa	1	7	7
03 Hahns Peak/Bears Ears	3	15	24
04 Parks	11	19	34

Conclusion: No clearcut units harvested during 2002 exceeded the 40-acre size limitation. The largest unit size that was treated was 34 acres, while the average sized unit was 17 acres. No change to the Forest Plan is necessary at present.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendations: Continue to monitor how the size and proximity of clearcut units impacts the landscape. This will help to determine the effects upon vegetation diversity, visual quality, and compliance with current policy and regulations (36 CFR, Part 219.27(d)(2)).

Monitoring Question 1-6: Are habitats for threatened, endangered and Forest Service Rocky Mountain Region sensitive species on the Routt National Forest being maintained or enhanced? (Fine Filter Scale)

During Fiscal Year 2002, the South Zone Aquatics Team and the Colorado Division of Wildlife surveyed 15 miles of habitat and fish populations in the Slater Creek watershed. Slater Creek has been identified as a priority watershed for the Medicine Bow – Routt National Forests. The intent of the surveys was to determine the extent of brook trout populations in the watershed and to determine if restoring Colorado River cutthroat trout is feasible. The Colorado River cutthroat trout is a native species to the Colorado River basin, a Management Indicator Species (MIS) for the Routt Forest Plan, and also is a Region 2 sensitive species. The surveys occurred at the end of June, 2002, in an effort to reduce stress on the fish due to the drought. Normally, surveys are not performed until mid July. The results are described below.

- The first survey of Slater Creek occurred just downstream of the FDR 49 road crossing. This was a forested section of stream with diverse habitats. The water temperature was 58 degrees Farenheit, and a total of 30 brook trout were measured. No cutthroat trout were sampled.
- The second survey of Slater Creek occurred upstream of the FDR 156 road crossing. This section is open and parklike, and willows are the predominant riparian species. The water was low and stagnant due to the drought, and the temperature was 64 degrees. A total of 34 brook trout were measured, however, no cutthroat trout were sampled at this site. Cutthroats were taken and measured near this location in 2000. It is unknown whether brook trout have displaced the cutthroat trout, or drought conditions have affected the distribution of the fish.
- The third section of Slater Creek was surveyed downstream of the FDR 154 road crossing about ½ mile upstream of the Forest Boundary. This section is also an open park and the water levels were low and stagnant, with a temperature of 70 degrees. No trout were sampled at this site, however, both brook trout and cutthroat trout were sampled in or near this area in 2000.
- Adams Creek and Crawford Creek were also sampled. One brook trout was sampled in Adams Creek downstream of the FDR 150 road crossing. Adams Creek is a very small creek with little fish habitat. The water was low and stagnant, with a temperature of 64 degrees. Crawford Creek was sampled about ¼ mile upstream from the Forest Boundary. No fish were sampled. Crawford Creek had little cover or undercut banks and the water temperature was 78 degrees.
- South Fork Slater Creek was sampled at 3 locations. The first location was upstream of the FDR 110 road crossing. A total of 24 cutthroat trout were sampled, but no brook trout were found. Riparian vegetation was a mix of spruce and alder, with good bank stability and little erosion. The water temperature was 58 degrees. The second location was downstream of the FDT 1144 trail crossing. A total of 21 cutthroat trout were counted, but no brook trout were sampled. Riparian vegetation was mostly alder and grasses, with stable banks and lots of overhanging vegetation. The water temperature was 54 degrees. The third site was located upstream of the Forest Boundary. Twelve brook trout were sampled, but no cutthroat trout were found. The riparian vegetation was mostly of open coniferous trees, with a water temperature of 71 degrees.

Based on the above information, restoration could be effective in South Fork Slater Creek with minimal effort. Restoration efforts in Slater Creek, however, would require much more effort and stocking may need to be done to establish adequate cutthroat populations. It is not known if the lack of cutthroat trout is a function of the brook trout invading the habitat or as a result of the drought. The evidence showed that the area had good riparian vegetation and function, with good water flows and temperatures to support trout. Conditions become marginal for Colorado River cutthroat trout when the temperature exceeds 70 degrees.

The South Zone Aquatics Team, in cooperation with the Colorado Division of Wildlife, removed brook trout by electrofishing 5 miles of stream in the Elkhead Creek Watershed during FY 2002. Elkhead Creek is also considered a priority watershed for the Forest due to the presence of a metapopulation of Colorado River cutthroat trout. Removal efforts started in 1997 to reduce the number of brook trout in streams where Colorado River cutthroat trout are present. Streams where removal efforts occurred are Armstrong Creek, Circle Creek, and Torso Creek.

- This work has been very successful, because brook trout no longer occur in Armstrong Creek.
- Circle Creek and Torso Creek still have fairly large numbers of brook trout, because ponds in the headwaters of these creeks have been stocked with brook trout as recently as 1993.
- Most cutthroat trout habitat in the Elkhead Creek watershed would be considered functional-at-risk due to past management and current grazing by livestock and ungulates.

During 2002, the South Zone Aquatics Team also surveyed for the four Region 2 listed sensitive amphibian species; boreal toad, wood frog (also a MIS), leopard frog, and tiger salamander, in order to determine the distribution, status, and trends for these species. The Routt National Forest has four identified boreal toad breeding sites. The South Zone monitors all the sites, except for one, which is monitored by the Colorado Division of Wildlife. Data for the boreal toad breeding sites include:

- Egg masses and tadpoles were seen at all sites in FY 2002.
- Metamorphosis was not confirmed at any of the sites, because it may have happened up to three weeks earlier than normal due to the high summer temperatures associated with the drought.
- None of the breeding sites dried up, but 2 of the 4 sites were nearly dry.
- The Mt. Zirkel Fire Complex approached within ¾ of a mile of one of the breeding sites and about 1½ miles of another site, but no direct or indirect effects were noticed at either site as a result of the fire.

About 300 acres of amphibian habitat around Big Creek Lakes and Rabbit Ears Pass were surveyed, with four new individual sightings of boreal toads. These sightings were in areas that have had previous sightings. The numerous sightings indicated that habitats are being maintained on the Forest.

Following the Mt. Zirkel Fire Complex, it was determined that the base population of Colorado River cutthroat trout in Lost Dog Creek perished as a result of the fire. The fire burned very hot and dead fish were seen in the creek. Total consumption of the riparian vegetation occurred throughout much of the Lost Dog Creek watershed. The South Zone Aquatics Team will work cooperatively with the Division of Wildlife to determine the appropriate course of action for this watershed in terms of restoring Colorado River cutthroat trout.

The South Zone Aquatics Team surveyed 55 culverts on 125 miles of roads on the Hahns Peak/Bears Ears and Parks Ranger Districts, with 23 being identified as possible fish passage barriers. With nearly 42 percent of the culverts being identified as potential barriers, this suggests that habitats may be fragmented.

Conclusion: Surveys during 2002 indicate that fewer Colorado River cutthroat trout were located than during the 2000 surveys. This may be the result of a combination of factors, including the competition from brook trout, the drought, or wildfire impacts.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendations: Continue to monitor the populations of Colorado River cutthroat trout to determine

the reasons for decline. Also, identify opportunities for enhancing or re-introducing the species into suitable habitats.

Monitoring Question 1-7: Are forest cover types and habitat structural stages (coarse filter described in the FEIS on pages 3-107 through 3-110) being provided for across the Forest?

Formal evaluation of this monitoring question will not occur until Fiscal Year 2003. A copy of the Forest's vegetation database (RMRIS/GIS coverage and associated attributes) was archived during January, 1998. This data will serve as a baseline, and will also be used for making comparisons in the 2003 Annual Monitoring Evaluation Report. Changes that occurred during 2002 to cover types and/or habitat structure stages due to insects, diseases, wildfire and wind will be addressed in the 2003 Annual Monitoring Evaluation Report. The forest may pursue collecting necessary information using cooperative agreements with other organizations. One method for obtaining cover type and habitat structural stage information is to re-measure timber inventory plots, however, this method is expensive. Cover types and habitat structural stages change very slowly over time, making remote sensing an alternative method of viable, cost-effective monitoring. No change to the Forest Plan is needed.

Conclusion: Surveys during 2002 indicate that forest cover types and habitat structural stages have not changed much since the original data for this item was archived during 1998.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendations: Forest vegetation changes very slowly over time, unless there is a catastrophic event, such as an insect epidemic or large wildfire. Comparing the data from 1998 to the survey data for 2003 will determine whether this item needs to be changed, continued, or eliminated, which would require a Forest Plan Amendment.

Monitoring Question 1-8: How are management activities affecting late successional forest structure in management Areas 5.11 and 5.13?

Formal evaluation of this monitoring question will not occur until Fiscal Year 2003. A copy of the Forest's vegetation database (RMRIS/GIS coverage and associated attributes) was archived during January, 1998. This data will serve as a baseline, and will also be used for making comparisons in the 2003 Annual Monitoring Evaluation Report. Changes that occurred during 2002 to late successional forest structures in Management Areas 5.11 and 5.13 as a result of insects, diseases, wildfire and/or wind will be addressed in the 2003 Annual Monitoring Evaluation Report. The Rocky Mountain Activities (RMACT) GIS coverage will be used to indicate where timber harvest attributes have changed the forest structure. No change to the Forest Plan is currently needed.

Conclusion: Surveys during 2002 indicate that late successional forest structural stages have not changed much since the original data for this item was archived during 1998.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendations: Forest vegetation changes very slowly over time, unless there is a catastrophic event, such as an insect epidemic or large wildfire. Comparing the data from 1998 to the survey data for 2003 will determine whether this item needs to be changed, continued, or eliminated, which would require a Forest Plan Amendment.

Monitoring Question 1-9: How are management activities affecting riparian habitats (including wetlands) on the Forest?

Riparian areas develop and function under a combination of stable, interacting features including valley bottom gradient and width, substrate characteristics, elevation, local hydrology, and climate. Human influences rarely change these factors, therefore, monitoring focuses on changes in the water table and plant species composition.

Wetlands are monitored in conjunction with riparian areas, as they often occur together. The Watershed Conservation Practices (WCP) Handbook (FSH 2509.25), which provides most of the of the soil, water, and riparian Forest Plan Standards and Guidelines, provides specific measures to protect wetlands. Management activities generally have little effect on wetlands, as projects are planned and designed to avoid wetland areas. Any impacts that have occurred to wetlands are usually from past management activities that were implemented before protection measures were established.

The effect of management activities on riparian habitats was evaluated using visual observations, photos, Proper Functioning Condition surveys (BLM, 1993), and greenline and vegetative cross-section surveys. Field reconnaissance determined that the effects of timber management are primarily from past activities, and that current timber management activities are not affecting riparian habitats. Poorly located roads and trails, particularly those that were user built, are impacting isolated riparian areas. When working on projects across the forest, these areas are identified for watershed improvement, TRTR, fisheries, or other projects that would improve riparian conditions. Field surveys and photo monitoring of recently completed projects indicates that riparian conditions are generally improving on the Forest.

Perhaps the biggest impact to riparian habitats is due to livestock grazing, particularly cattle. The most commonly used methods to assess the effects of livestock grazing include Proper Functioning Condition (PFC) surveys (BLM, 1993), and greenline and riparian cross-section surveys. PFC is a qualitative method used to evaluate the hydrologic, vegetative, and soil conditions of riparian areas to determine overall health. Greenline and vegetative cross-sections provide follow-up methods to the PFC assessment when more quantitative information is desired. Greenline surveys focus on the first perennial, lineal vegetative grouping on or near the edge of a stream. Evaluation of the greenline provides an indication of the streambanks ability to buffer the hydrologic forces of spring runoff and other storm events. Vegetation cross-sections quantify the percent of each vegetation community type in a riparian complex. Disturbances in the riparian complex are often reflected by changes in the vegetation community type.

PFC surveys are usually conducted in conjunction with the analysis for range allotments. As indicated in the Watershed Conservation Practices Handbook, PFC is a prerequisite to achieving robust stream health and desired vegetation condition (FSH 2509.25). In some cases, such as the Michigan and Illinois allotments (Parks RD), all of the surveyed stream sections were in proper functioning condition. On other allotments, such as the Troublesome (Parks RD), Red Dirt (Yampa RD), and California Park (Hahns Peak-Bears Ears RD) allotments, several sections were functionally at risk. This suggests that the condition of riparian habitats varies across the forest, with some areas in a degraded condition.

During 2000-2002, the forest completed greenline surveys on 28 stream sections across the forest. Follow-up surveys were conducted in areas of concern that were identified by PFC surveys, as well as other stream reference points. The results showed that half of the areas were rated as good-excellent (14 sites), 43 percent (12 sites) were rated as moderate-good, and 7 percent (2 sites) were rated as poor-

moderate. Similarly, 26 vegetative cross-sections were surveyed in riparian areas in conjunction with greenline surveys. The results were similar, with 42 percent (11 sites) rated as good-excellent, 38 percent (10 sites) rated as moderate-good, and 19 percent (5 sites) rated as poor-moderate. These results indicate that riparian conditions on the Forest are being maintained in moderate or better condition on 80 percent of the streams that were surveyed.

The greenline surveys respond more readily to changes caused by management activities than the vegetative cross-sections. The fact that there was a higher percentage of sites with poor-moderate vegetative cross-sections could be the result of past management impacts that altered the vegetative composition and are still recovering. The greenline survey typically has a faster response time due to the presence of saturated or near-saturated conditions, which support healthy riparian vegetation. Alterations in the vegetative cross-section often occurs as a result of changes in the water table that can result from soil compaction and/or stream instability. Restoration of the water table and hydrology necessary to support riparian vegetation in areas away from the greenline is usually a longer term process than the area adjacent to the greenline.

Riparian problems related to grazing are identified and addressed during the environmental analysis process for different allotments. Subsequently, changes may be made to the type of grazing system, season of use, exclosures, or livestock numbers to correct environmental problems. Follow-up monitoring indicates that these measures are proving to be effective for moving the riparian habitats toward the desired condition. In addition, implementation of watershed improvement projects is helping to improve riparian areas that being affected by roads and trails.

Conclusion: Monitoring riparian habitats using PFC, greenline, and vegetative cross-sections suggest that overall, riparian conditions are being maintained in a satisfactory condition. Areas of concern have been identified and are being addressed by changes in the grazing strategy as a result of the NEPA process. Monitoring will continue to determine if riparian conditions are improving. With proper implementation, Forest Plan Standards and Guidelines should be adequate to protect riparian habitats.

No change indicated	
Implementation change needed	X
Change to Forest Plan needed	

Recommendation: Continue to monitor riparian conditions in association with stream function and soil health, as described in Monitoring Question 1-3. Where surveys indicate the presence of degraded riparian, stream, or soil conditions, adjustments to Allotment Management Plans are called for.

Monitoring Question 1-10: Are stands adequately stocked within 5 years of final harvest?

The Forest compiles the Reforestation and Timber Stand Improvement Accomplishment Report annually. Part of the report identifies all sites that received a final timber harvest during 1997. The regeneration surveys indicated that of the 1,060 acres treated using a final harvest, 52 acres lacked sufficient stocking to be certified. All 52 acres were cut using clearcut patches that ranged in size from 2 to 15 acres. The stands that failed to meet the stocking requirement had poor cone serotiny and low seed viability due to old age and disease. These stands are expected to be fully regenerated by natural means. The progress of restocking these sites will be monitored by performing additional surveys, and if not successful, they will be scheduled for planting.

Conclusion: The percentage of the acres harvested that did not meet the stocking standard within 5 years was 4.9 percent, which is within the limits established by the Forest Plan.

No change indicated	
Implementation change needed	X
Change to Forest Plan needed	

Recommendation: Continue monitoring to ensure that regeneration meets the five-year requirement and that the records are updated on a regular schedule to allow verification as part of the annual monitoring report. As projects, site conditions, and weather permits, monitor the success of tree regeneration in areas of elk sedge and grass, and also at rocky sites.

Monitoring Question 1-11: Has timber suitability classification changed on any lands?

Formal evaluation for this monitoring question will not occur until the Fiscal Year 2008. A copy of the Forest's timber suitability database was archived during January, 2001. This data will serve as a baseline for comparisons that will be made in the 2008 Annual Monitoring Evaluation Report.

Conclusion: No changes to the amount of suitable lands occurred during 2002.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendation: Continue to annually monitor baseline date for the 2008 Evaluation Report.

Monitoring Question 1-12: What is the relationship between changes in habitat and population trends of the management indicator species?

Formal evaluation for this monitoring question will not occur until Fiscal Year 2003 or 2004, depending on funding. A copy of the Forest's vegetation data (RIS and GIS data attributes) has been archived as of January, 1998. This data will serve as a baseline for initial comparisons that will be made in future Monitoring Reports. Routt biologists drafted an amended MIS list that, upon finalization, may include snowshoe hare, northern goshawk, and several species of songbirds. Annual monitoring of every species may not be possible due to constrained funding, however, field surveys may be rotated each year so that population trends of all species can be assessed over time. During 2002, goshawks, snowshoe hares, and songbirds were monitored.

In Fiscal Year 2002, song birds were monitored for the fourth consecutive year. Skorkowsky (Colorado State University Masters Thesis 2003) determined that the Routt Divide Blowdown (1997) changed the composition of songbird communities primarily by increasing the densities of ground-nesting and/or open-habitat birds (dark-eyed juncos, yellow-rumped warblers, tree swallows, and mountain bluebirds) and by decreasing the densities of interior-forest dwelling birds (golden-crowned kinglets, ruby-crowned kinglets, red-breasted nuthatches, and gray jays). Salvage logging that occurred in the blowdown also changed the composition of songbird communities. This change was reflected by higher densities of dark-eyed juncos, mountain chickadees, and broad-tailed hummingbirds in the non-salvaged blowdown areas (Skorkowsky 2003). Salvage logging likely reduced habitat structure for these birds resulting in a reduced capacity of the area to support these species. However, all species present in the blowdown area continued to persist after salvage harvesting.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendations: Though it takes a number of years to develop population trend information, management activities appear to be adequately providing habitat for goshawks and snowshoe hares. In contrast, not enough time has passed to evaluate the effects of habitat changes due to large disturbances such as fire, beetle activity, or blowdowns. Comparing the data from 1998 to future survey data will determine whether this item needs to be changed, continued, or eliminated. If funding continues to be inadequate, a rotation schedule should be initiated so that certain MIS are monitored on a periodic basis.

Monitoring Question 2-1: Do recreational opportunities respond to Forest users desires, needs, and expectations?

Formal evaluation for this monitoring question will not occur until Fiscal Year 2003. However, 1999 to 2002 information has been collected to ensure that it is available for future evaluation. No change to the Forest Plan is needed.

Conclusion: Data collected during the past several years is beginning to show some trends in recreational use and demand. These trends will be discussed in the report for Fiscal Year 2003.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendations: Recreation use and demand can change very slowly over time, or fairly rapidly, such as snowmobile use in the Rabbit Ears Pass area. Comparing the data from 1999 to the survey data for 2003 will determine whether this item needs to be changed, continued, or eliminated, which would require a Forest Plan Amendment.

Monitoring Question 2-2: Does the Forest infrastructure (travelways, roads, trails) facilitate attainment of desired recreational experiences, including access for a wide range of abilities?

Formal evaluation for this monitoring question will not occur until Fiscal Year 2003. Monitoring Question 2-1 is also relevant to this question. The following table summarizes the Forest inventory of accessible facilities as of January, 2002. This data will be used to complete the evaluation for 2003.

Accessible Facility Type	Year 1 (1998)	Year 2 (1999)	Year 3 (2000)	Year 4 (2001)	Year 5 (2002)	Total
Developed Campsites	11 + 5 toilet	2 +1 toilet	0	2	Design of Bear Lake CG CIP	15 toilets + 8 trails
Developed Picnic sites	5 sites + 3 toilets	1 site + trail	2 sites	1 group site		9 sites and 3 toilets
Granger-Thye Rentals	0	0	0	0		0

Trailheads (plus toilets)	2 + 2 Toilets	4 Toilets	0	1	1	3 + 8 Toilets
Trails (access)	0	0	4	2	0.5	6.5
Administrative Offices	3	0	0	0	Const. of Yampa Off.	3
Special Uses:						
Outfitter Guides	2	0	1	0		3
Resorts	1	0	0	0		1
Recreation Events	0	0	0	0		0
Organization Camp	0	0	0	0		0
Field Offices	1	2	0	0		3
Programs	1	0	0	0		1
Pier (Bear Lake)	1	Access trail	0	0		1 = access trail

Conclusion: Data collected during the past several years is beginning to show some trends in meeting accessibility needs on the Forest. These trends will be discussed in the report for Fiscal Year 2003.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendations: Recreation use and demand can change very slowly over time, or fairly rapidly. Comparing the data from past years to the survey data for 2003 will determine whether this item needs to be changed, continued, or eliminated, which would require a Forest Plan Amendment.

Monitoring Question 2-3: How are recreational activities affecting the physical and biological resources of the Routt National Forest?

This item was not reported for Fiscal Year 2002.

Conclusion: Recreation use and demand can change very slowly over time, or fairly rapidly, such as snowmobile use in the Rabbit Ears Pass area. Analyzing the effects of recreational activities on the Forest will determine whether this item needs to be changed, continued, or eliminated, which would require a Forest Plan Amendment. No change to the Forest Plan is needed at this time.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendations: Continue to review recreation facilities and activities for the need to reduce effects to other resources. This item needs to be reported for FY 2003.

Monitoring Question 2-4: How are selected projects and programs affecting visual quality?

The Bear Lake Campground CIP project on the Yampa Ranger District was visited during 2002. The reconstruction activities were not completed at the time of the field review, but are anticipated to be completed during 2003. CXT precast toilets were delivered and installed at the campground. The Tioga

Special model double-vault toilets with barn wood walls and cedar roof textures provide a positive Forest Service image and is appropriate for the campground, since it is in a Roaded Natural ROS setting. Brown-colored toilets were ordered, but white taupe-colored toilets were delivered, which do not blend and remain subordinant with the surrounding landscape.

Conclusion – Evaluation of this project determined that it does not meet the assigned visual quality objective. The toilets should have been inspected and approved prior to taking delivery. This appears to be a problem in implementation, not in the character of the Forest Plan. No change to the Forest Plan is necessary at this time.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendations: Continue to review recreation facilities and activities for the need to reduce effects to other resources. This should include all aspects of a project, from planning to implementation. This item needs to be reported for FY 2003.

Monitoring Question 2-5: How are partnerships contributing to maintaining or enhancing recreation resource opportunities?

Methodology: Review and evaluate partnerships, MOUs, and Special Uses for Fiscal Year 2002.

Program	***RVDs or Participants***	***Dollars Collected***
Recreation Special Uses	***Total***	***Total***
Concessionaire	None	None
Organization Camp	2,000	80
Recreation Residences	7 cabins; 2,070 RVDs	7,.836
Isolated Cabins	None	None
Resorts	None	None
Recreation Events	20	80
Outfitter and Guides	41,635 Service Days	127,887
Winter Resorts (Ski Areas)	1,001,003	781,656
Motion Picture/Television Location	None	None
Program	***Participants***	***Dollars Collected***
Partnerships (Successful)	3 partnerships	90,000
Volunteers	163	Value: 101,868

Conclusion: Although the accomplishments by partnerships was less during 2002 than the previous year, they are still contributing to recreational opportunities on the Forest. No change to the Forest Plan is needed at this time.

No change indicated	
Implementation change needed	X
Change to Forest Plan needed	

Recommendations: There is a need to develop and implement a system that is stable and provides meaningful ways to measure and report partnership accomplishments. This will be coordinated between the Ranger Districts and the Forest Recreation Staff Specialist.

Monitoring Question 2-6: Does the Forest provide interpretive experiences that describe ecosystem functions and the Forest Service mission?

More than 40,000 Forest visitors were directly contacted using personal interpretation and environmental education programs on the Routt National Forest during 2002. A large number of these contacts were by direct communication related to the beetle epidemic, fuel reduction projects, and the role of natural disturbances in a forest environment.

More than 15,000 Forest visitors were contacted using other interpretive programs, such as campfire programs, nature hikes, historical walks, and archaeology presentations. Forest Service information was also presented to visitors using various brochures, maps, trailhead signs, wayside exhibits, special events, table-top displays, Smokey Bear programs, Woodsy Owl programs, and school presentations.

Routt National Forest employees participated in county fairs, parades and other special events and celebrations. Parade entries and booths focused on fire, trees/wildflowers, wilderness ethics, recreation, and natural disturbances. The Routt National Forest is a leading member of Partners in Interpretation. This partnership focuses on interpreting the natural and cultural resources of northwest Colorado. Interpretive programs were presented in cooperation with the following agencies and organizations:

- Colorado State Parks.
- The City of Steamboat Springs.
- The Tread of Pioneers Museum.
- The Steamboat Ski Area.
- The Colorado Division of Wildlife.
- Yampatika.
- Steamboat Springs Chamber Resort.
- Bureau of Land Management.
- Nature Conservancy.

Conclusion: The Routt National Forest is providing interpretive experiences and focusing on opportunities that assist in communicating ecosystem functions to the public. No change to the Forest Plan is needed at this time.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendations: Continue programs and partnership with other organizations. Focus on interpreting the Forest Service multiple-use mission and increase the number of programs available on the Forest by seeking additional sources of funding for education/interpretation.

Monitoring Question 3-1: Are outputs of goods and services being produced at a rate consistent with the projections in Table S-2 of the FEIS?

Formal evaluation for this monitoring question will not occur until Fiscal Year 2003. The Forest will compare actual accomplishments with the projections that were made in the revised Forest Plan. The following table was derived from the Routt Forest Plan EIS (1997 Revision, Chapter S). It has been modified and annotated to display a comparison between outputs projected by the Forest Plan and what was actually accomplished during Fiscal Years 1999 - 2002.

The Forest Plan presents the annual projected outputs for the ten-year planning period, however, they are neither minimum nor maximum targets. The data is displayed as annual outputs, in order to facilitate

comparisons for monitoring purposes. These data will fluctuate as the Forest budget changes in response to annual constraints imposed by Congress and the Administration. The Forest will review outputs at year five (2003) to compare actual accomplishments to Forest Plan projections.

Resource Program Activity/Outcome	Units	Forest Plan Desired Condition Level	Forest Plan Experienced Budget Level	FY 1999 Level	FY 2000 Level	FY 2001 Level	FY 2002 Level
RECREATION							
Developed Capacity Available / 1	PAOT-days	1,541	1,452	1,520	1,520	1,603	1,583
Trails Available to Standard /2	Miles	601	538	555	555	555	298
Trails Available-Total	Miles	820	810	829	940	1,068	1,068
Developed Use	M Visits 3/	616	616	(9)	(9)	NR(8)	334
Dispersed Use	M Visits	877	877	(9)	(9)	(9)	484
WILDERNESS							
Wilderness Use	M Visits	98	98	(9)	(9)	NR(8)	40
HERITAGE RES.							
Inventory Area	Acres/yr	6,348	6,532	5,703	7,936	2,000	14,013
WILDLIFE - TES							
Inventory	Acres/yr	8	5	0	0	10,445	21,566
Monitoring Projects	Projects	2	1	2	4	5	4
Project Coordination	Acres	17,100	13,300	84,742	27,200	1,225	23,400
GRAZING							
Grazing - Sheep	Hd Mnth /4	174,400	137,300	149,168	152,138	142,804	141,307
Grazing - Cattle	Hd Month	39,600	31,200	36,732	31,973	29,489	33,903
RANGE VEG.							
Noxious Weeds	Ac Treat	385	303	1,871	1,145	992	925
Rangeland Vegetation Inventory	Acres/yr	37,338	34,317	0	0	0	0

FOREST VEG.							
Volume Offered Chargeable Conifer (ASQ) /5	MCF/yr (6) MBF/yr	3,200 14,800	N/A N/A	1,999 9,245	1,392 6,842	0 0	2,014 9,902
Resource Program Activity/Outcome	**Units**	**Forest Plan Desired Condition Level**	**Forest Plan Experienced Budget Level**	**FY 1999 Level**	**FY 2000 Level**	**FY 2001 Level**	**FY 2002 Level**
Volume Offered Chargeable Aspen (ASQ)	MCF/yr MBF/yr	1,200 2,000	N/A N/A	0 0	246 1,220	0 0	8 3
Volume Offered - Total Sale Program (All wood products)	MCF/yr MBF/yr	5,200 24,050	3,600 16,650	2,131 9,856	2,071 10,367	92.8 569.5	2,117 10,527
Harvest - Even age regeneration cut	Acres/yr	1,211	790	303	335	739	265
Harvest - Even age non-regeneration cut	Acres/yr	245	169	16	0	303	255
Harvest - Uneven age	Acres/yr	235	167	109	138	207	149
Reforestation	Acres/yr	1,211	790	934	1,002	826	1,205
Timber Stand Improvement	Acres/yr	1,027	1,019	1,086	461	111	54
Forestland Vegetation Inventory	Acres/yr	107,856	28,235	13,124	9,955	13,272	5,734
SOIL, AIR, WATER							
Soil and Water Resource Improvements	Acres/yr	143	133	18	28	220	5
Watershed Condition - Class I Watersheds	Wtrshds	85	85	55	55	55	53
Watershed Condition - Class II Watersheds	Wtrshds	49	49	73	73	73	71
Watershed Condition - Class III Watersheds	Wtrshds	0	0	0	0	0	4
Water Yield from timber harvest	Ac Ft/Year	715	490	719	234	490	374

FIRE							
Fuel Treatment	Acres	1,682	1,609	786	296	263	760
ROADS							
Roads Maintained /7	Miles	1,500	1,448	500	617	1,170	994
Resource Program Activity/Outcome	**Units**	**Forest Plan Desired Condition Level**	**Forest Plan Experienced Budget Level**	**FY 1999 Level**	**FY 2000 Level**	**FY 2001 Level**	**FY 2002 Level**
Road Construction	Miles/yr	16.2	9.3	0.1	2.3	1.5	8.7
Road Reconstruction	Miles/yr	9.8	5.2	0.0	1.8	2.4	17.7
Road Obliteration	Miles/yr	18.4	18.4	20.0	10.0	1.0	8.4
TRAILS							
Trail Construction/ Reconstruction	Miles/yr	6	1	20.8	14.6	36.2	37.9

(1) Recreation Developed Capacity Available has changed due to implementation of the new INFRA structure database, which automatically calculates capacity of developed sites depending upon opening and closing dates. This figure will probably fluctuate annually, depending upon different conditions that may affect these dates.

(2) Trails Available to Standard have increased more than anticipated due to changes in program emphases on the Districts, state funding availability, and an identified need.

(3) M Visits = 1,000 visits

(4) Hd Mnth = head month; calculated by multiplying the number of animals by the months.

(5) ASQ = Allowable Sale Quantity.

(6) MCF/yr = thousand cubic feet per year.

(7) The Forest road system consists of approximately 1,500 miles. About one third, or 500 miles, are maintained each year on a rotational cycle.

Conclusion: Although variable by output, the implementation of programs on the Forest is similar to what was predicted in the Forest Plan. No change to the Forest Plan is needed at this time.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendations: Comparing the data from 1998 to the output information for 2003 will determine whether this item needs to be changed, continued, or eliminated, which may require anAmendment.

Monitoring Question 3-2: Are costs of implementing programs occurring as predicted in the Table S-3 of the FEIS?

Formal evaluation of this Monitoring Question will not occur until Fiscal Year 2003. Information for this item was derived from Table S-3 in the Forest Plan Final EIS, which compares two different budget levels. The Desired Condition budget level is relatively unconstrained and reflects the goal of full implementation of the Forest Plan. The Experienced Budget level reflects the amount of actual funds allocated to the Forest during fiscal years 1992, 1993, and 1994, with 1994 being displayed as the Base Year. The actual Forest budget will fluctuate annually according to Congressional allocations. No change to the Forest Plan is currently needed.

Conclusion: Although slightly increasing, the costs of implementing programs on the Forest are similar to those predicted in the Forest Plan. No change to the Forest Plan is needed at this time.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendations: Comparing the data from 1994 to the cost information for 2003 will determine whether this item needs to be changed, continued, or eliminated, which would require a Forest Plan Amendment.

Monitoring Question 3-3: How are Forest management activities affecting local employment and income?

Formal evaluation of this Monitoring Question will not occur until Fiscal Year 2003. Forest personnel are in the process of developing a methodology to address this question. In addition, the Forest Service is currently developing a standardized approach for collecting local economic information. The Forest has been validating and analyzing data that has been collected since the Forest Plan was approved during 1998. The data collected since then will be used to evaluate this Monitoring Question.

Conclusion: Although minor compared to other economic indicators, the Routt National Forest is contributing to local employment and income. No change to the Forest Plan is needed at this time.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendations: Comparing the data from 1998 to the survey data for 2003 will determine whether this item needs to be changed, continued, or eliminated, which would require a Forest Plan Amendment.

Monitoring Question 3-4: How well is the forest interacting and planning in cooperation with communities?

In partnership with the Forest Service and other agencies, North Park High School in Walden became the home of the only Biomass Generator in Colorado, and one of only seven such pilot projects in the nation during 2002. The Biomass Generator converts small wood products into electricity to heat a greenhouse where students propogate native plants. Eventually, the generator will provide power for the entire High School and the public swimming pool. The Parks Ranger District and local citizens have identified sources of fuel for the Biomass Generator.

The Bark Beetle Information Task Force was formed during the Spring of 1999 to provide information and education for residents of Routt County. The primary focus of the Task Force is related to potential beetle epidemics, planned fuel reduction projects, and wildfires. This community-based group is comprised of members from the Medicine Bow-Routt National Forests, Colorado State University Cooperative Extension, City of Steamboat Springs, Routt County, Steamboat Ski and Resort Corporation, the Steamboat Chamber Resort Association, and private citizens. The objective of the group is to help residents of Routt County and the surrounding area to understand the potential environmental impacts of a beetle epidemic, the importance of reducing forest fuels, and the overall role of fire in the ecosystem.

The Forest is also an active partner with the Routt County Wildland Fire Council. This group focuses on fire planning and wildland fire awareness. The Forest is also involved with the Routt Winter Task Force, which is a community organization working to address increasing conflicts between various winter uses in the backcountry. Forest Service specialists continue to give presentations about a variety of forest subjects to civic groups, homeowner associations, and schools.

Conclusion: During Fiscal Year 2002 the Forest was actively involved with neighboring communities and organizations by providing a wide variety of information related to forest planning and project implementation. No change to the Forest Plan is needed.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendation: The Forest needs to continue involving the public, and specifically coordinating and interacting with adjacent communities and organizations.

Monitoring Question 4-1: Are there changes that have resulted in unforeseen issues that require Forest Plan amendment?

A fifth-year formal evaluation for this monitoring item will not occur until FY 2003. In the interim, information for this item is presented to help track the issue/plan amendment process. During Fiscal Year 2002 there was no change in the status of several issues that have been identified in previous Monitoring and Evaluation Reports.

The development of Forest Plan amendments to conserve lynx and their habitat on six national forests in Colorado and southern Wyoming (involving up to 6.3 million acres within Lynx Analysis Units, LAU) is continuing. During February, 2000, five Regional Foresters and four U.S. Fish and Wildlife Service Regional Directors signed a *Lynx Conservation Agreement and Strategy (LCAS)*, to promote the conservation of lynx and its habitat. The agreement requires the agency to review and consider recommendations in the LCAS before making any new decisions to implement actions in lynx habitat. Any changes in management direction will be made by an Amendment or Revision of the Forest Plans. Due to legal challenges and other difficulties, a draft Environmental Impact Statement was not released as planned during 2002.

Similarly, the Roadless Conservation Initiative, proposed by President Clinton in October of 1999, remained suspended by litigation, and a subsequent Administrative Order during 2002. This rule was published in the Federal Register on January 12, 2001, which prohibited timber harvest and road construction/reconstruction within inventoried roadless areas. On May 4, 2001, the Secretary of Agriculture announced a reexamination of the Roadless Area Conservation Rule. Two Interim Directives (issued on July 27, 2001) reserved to the Chief of the Forest Service, with some exceptions, authority to

approve timber harvest and road construction and reconstruction in roadless areas. The Interim Directives remained in effect throughout 2002. Any subsequent reevaluation of the Roadless Conservation Initiative, or resolution of pending litigation, could generate significant changes to how the Forest manages the inventoried roadless areas. The Fifth Year Monitoring and Evaluation Report, due to be completed in 2004, will address this issue in more detail.

A desire to review the species selected as "Management Indicator Species," with the objective of recommending improvements, was initiated on the Medicine Bow National Forest this year (2002), with a similar effort scheduled to begin on the Routt National Forest in 2003.

Conclusion: No amendments to the Routt Forest Plan were processed during Fiscal Year 2002.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Recommendations: Continue to monitor issues that may have an impact on the outputs or programs stated in the Forest Plan, which could potentially require an amendment.

Monitoring Question 4-2: Are the standards and guidelines prescribed in the plan being incorporated in NEPA documents and implemented on the ground?

During 2002, the Forest Plan ID Team again reviewed several projects related to the Routt Divide Blowdown and also some fuels reduction activities. The ID Team concluded that the standards and guidelines stated in the Plan are being appropriately incorporated into project planning and implementation. No necessary changes have been identified.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

Monitoring Question 4-3 - Is the Forest moving closer to the desired condition identified in the Forest Plan at the Geographic Area and Management Area scale?

Formal evaluation of this Monitoring Question will not occur until Fiscal Year 2003. Forest vegetation data was extracted from the RIS and GIS databases during January, 2001, and was archived. This data will serve as a baseline for the comparative evaluations that will be made in the 2003 Monitoring Report. No change to the Forest Plan is necessary at this time.

No change indicated	X
Implementation change needed	
Change to Forest Plan needed	

LIST OF PREPARERS

The Annual Monitoring Evaluation Report for Fiscal Year 2002 was prepared by the Forest Planner and Interdisciplinary Team of the Medicine Bow-Routt National Forests. The following list displays the name and resource program of the Forest Leadership Team, and also the Forest ID Team members that contributed the information and evaluation for the Monitoring Items.

FOREST LEADERSHIP TEAM

NAME	FUNCTIONAL RESOURCE AREA
Mary H. Peterson	FOREST SUPERVISOR
Susan Kay	Director - Business Management Group
Lynn Jackson	Director - Planning, NEPA/FOIA/Appeals
Richard Rine	Director - Renewable Resources
Mike Murphy	Director - Program Support Group/Recreation

STAFF SPECIALISTS

NAME	FUNCTIONAL RESOURCE AREA

The ID Team was comprised of the following individuals:

Tommy John	Soil Scientist
James Myers	Forester/Silviculturist
Gregory Eaglin	Fisheries Biologist
Carol Tolbert	Data Coordinator RIS/GIS
Diann Pipher-Ritschard	Public Affairs
Liz Schnackenberg	Hydrologist
Scott Cowman	Hydrologist (Blowdown)
Kirk Wolff	Air Resource
Jeff Tupala	Landscape Architect
Mary Sanderson	Recreation
Bill Schaupp	Entomologist (Blowdown)

CERTIFICATION

I have reviewed the Annual Monitoring and Evaluation Report for the Routt National Forest that was prepared by the Forest Interdisciplinary Team for Fiscal Year 2002. I believe that the results of Monitoring and Evaluation, as documented in this Annual Report, meet the intent of both, Chapter IV of the Forest Plan, and appropriate Regulations (36 CFR 219.12(k); 1982 version).

The Forest ID Team and Leadership Team have not identified any significant changes in conditions or demands of the public that would change the goals, objectives, or outputs of the Forest Plan (36 CFR 219.10(g)). Therefore, I have determined that an Amendment to correct any identified deficiencies in the Plan is not needed at this time.

I have also considered the recommendations made by the ID Team regarding the proposed changes to the Monitoring procedures or implementation methods, as described in this report. I concur that the recommended changes are necessary to improve the effectiveness of the Forest Monitoring Program or implementation of resource projects on the ground. These changes will be made by Forest personnel, as funding allows, and will comply with the appropriate analysis and documentation procedures of all laws and regulations, including the NEPA.

I concur with the findings of the 2002 Annual Monitoring and Evaluation Report for the Routt National Forest. This is not an appealable decision, according to 36 CFR 215.7, "Decisions Subject to Appeal." Contact Steve Nielsen, NEPA Staff, at the Medicine Bow-Routt National Forests, 2468 Jackson Street, Laramie, Wyoming, 82070, or call (307) 745-2404, if you have any specific concerns, questions, or comments about this report.

s/ Mary H. Peterson — October 23, 2003

MARY H. PETERSON — Date
Forest Supervisor