TABLE OF CONTENTS

CHAPTER II
FY 2000 MONITORING RESULTS

I. MONITORING RESULTS RELATED TO ECOSYSTEM HEALTH

DIVERSITY OF VEGETATION & WILDLIFE

The following table describes just some of the monitoring accomplished in 2000. This information reflects how well the Forest is--

- Improving the diversity of plants, animals, and stand conditions and promoting the habitat needs of wild turkey, black bear, and associated species using pre-commercial and commercial timber harvests (*Forest Plan,* pp. 37-38).
- Maintaining open areas of National Forest land for forage, wildlife, and visual purposes using tools such as livestock grazing, prescribed fire, etc.
- Managing habitat to help recovery of threatened and endangered species on the Forest and protecting sensitive and unique species until their populations are viable.
- Cooperating with, and coordinating plans with, other Federal, State, and local agencies and with private groups to improve the management of natural resources and reduce potential conflicts; for example, graduate students, college professors, and/or the West Virginia Division of Natural Resources Wildlife Resources Section perform studies and the public participates in the development of various management actions.

Table B. FY 2000 monitoring conducted to assess diversity of vegetation & wildlife.

Monitoring Item	Results
Improve Diversity & Promote Habitat	**Creating Early Seral Habitat** About 769 acres of regeneration cutting (clearcuts, two-age cuts and seed tree cuts) was implemented in FY 2000. This reduced the 70+ age classes and added to the 0-15 age class, distributing the Forest's ages classes more evenly over time and space. **Perpetuating Mast-producing Tree Species** To perpetuate mast-producing species, even-age management was the primary method used in FY 2000. Mast data collected over time has proven useful in predicting population trends (e.g. study comparing 20 years of mast data (1979-1998) that helped predict black bear harvest success). Mast conditions during 2000 were the best since 1971; 2000 was

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Monitoring Item	Results
	one of the most abundant wild foods producing years on record in West Virginia (WV Big Game Bulletin, 2000). The WVDNR Wildlife Section, in cooperation with the Law Enforcement Section and the Division of Forestry, conducts a survey each year of mast abundance of 18 tree and shrub species that are important wildlife foods. In 2000, a bumper crop of beechnuts was found throughout West Virginia. Normally beechnuts are difficult to find by December because they are relished by so many species of wildlife; however, in some areas, beechnuts were found up into February. Black cherry, a favorite food of several management indicator species, produced about the same amount as 1999. All the oaks produced more acorns than Fall 1999. Grape was the only favorite food of management indicator species such as wild turkeys that was less common than 1999. **Thinning Over-stocked Stands** In FY 2000, 623 acres were thinned. **Botanical Harvests** The volume and value of botanical products sold from the Forest in FY 2000 are noted below: One **cohash** permit was issued in 2000. This permit authorized the collection of 50 lbs of cohash for a fee of $10. In 2000, 58 **Christmas trees** were sold for a total of $290. Eight tons of **evergreen boughs** were sold for $96.00 Forty-four **ginseng** permits were sold at a value of $440.00. The MNF sold 143 **moss** permits for a total of $1,881.50 in 2000. These permits authorized the harvesting of 56.7 tons of *Lycopodium* and wood moss.
Creating Openings	**Native Versus Non-native Seed Success** Johnson Run Timber Sale (12 June 2000) The wildlife opening created in payment unit 14 was monitored to determine whether seed planted on May 17, 2000, had been successful (see Wildlife Opening Monitoring Report in the FY 2000 monitoring file). Gauley District personnel noted that the cover crop of annual rye was coming in well on the skid road, but was sparse within the opening (3 lbs per acre were planted within the opening). The

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Monitoring Item	Results
	native grass mixture had not sprouted yet. *Further monitoring will be needed to document the growth of the native grass mixture.* This unit was planted without a good way of breaking up the soil, subsequent seeding in other openings was done while breaking up the soil with a rock rake. Because of this difference, *this unit should be closely compared to the seeding success in the other openings.* Perkins Timber Sale (26 June 2000) Payment Unit 11 was seeded on June 7, 2000. Because of the natural growth of deer tongue and other native grasses, only bare spots were seeded with the native grass mixture and cover crop of wheat. The cover crop of wheat responded well with quite a bit of growth within the formerly bare regions of the opening. Future monitoring will be needed to document the growth of the native grass mixture. Craig Run Timber Sale (27 June 2000) Payment Unit 13 was seeded on May 18, 2000. The seeding on the skid road leading to the opening had been fairly successful—with a thick to sparse cover of annual rye throughout the skid road. Unfortunately, the seeding within the opening did not seem to be have been successful. With shoots primarily coming up on the few flatter portions of the opening, it looked as though rainfall that had followed the seeding had washed the seed from the majority of the opening. Cranberry Ridge Timber Sale (6 September 2000) The seeding that had been done in payment unit 17 on June 8-12, 2000, was successful. About 85-90% of the opening was grass covered with lots of partridge pea growth in the three openings. Because this unit was bulldozed less than a year before seeding, the use of an ATV and rock rake was much easier in this unit than in units that had begun to regenerate. This may have lead to this higher success for seeding.
Maintaining Openings	**Grazing Outputs/Services** Thirty-nine openings were maintained via grazing permits. A total of 4293 head months of grazing were provided. Five range structures and seven acres of non-structural improvements were completed; these included installing gates, replacing boundary fence, and adding posts to existing fences. A detailed list of range accomplishments is available in the files.

Table B. FY 2000 monitoring conducted to assess diversity of vegetation & wildlife.

Monitoring Item	Results
	Allotment Data Collection Data was collected for two-thirds of the Forest's allotments. Data collected from 1/3 of these allotments were entered into the infrastructure database. **Grazing - Camp Bright Monitoring** Several range allotments on the Forest were monitored to ensure permit holders were complying with the terms of their grazing permits. Also, as part of the Forest's formal monitoring efforts, an interdisciplinary team monitored the Camp Bright Grazing Allotment on July 20, 2000 (see **17 page Camp Bright Report at fs.fed.us/r9/mnf/environmental/environmental_index.htm**). Camp Bright is a 24-acre allotment located along Stuart Memorial Drive (FR 91), about seven miles from Elkins, WV. It is in the Bear Heaven Opportunity Area (OA 13.011) and governed by Forest-wide and Management Prescription 3.0 direction. When the team met, they addressed the following questions: • How often has the condition of the allotment been checked? • What is the vegetative condition of the allotment at the time of this monitoring as compared to the conditions described in the 1994 Allotment Management Plan? How have things changed over time? • What is the season of grazing and grazing system being used? What is the grazing capacity? • Are annual operating plans being implemented? Are they having the desired effect? • Were the projects that were identified in the Allotment Management Plan implemented? Were implemented projects executed as planned? If not, what changes were made and why? Did implemented projects have the anticipated effects? • What was the condition of the road within the allotment in 1994? What is the condition of the road in 2000? • Has the allotment been managed according to forest-wide standards/guidelines? Are changes in these needed? • Has the allotment been managed according to MP 3.0 guidelines? Are changes in standards/guidelines needed? • Did any barriers exist that prevented implementation of some approved projects? • What are the ramifications of inadequate range funding?

Table B. FY 2000 monitoring conducted to assess diversity of vegetation & wildlife.

Monitoring Item	Results
	Detailed responses to the above questions are made in the Camp Bright Report, which is posted on the MNF website. From this monitoring, the ID Team made the following **recommendations** to improve range conditions on the Forest: 1. Increase efforts to conduct and document inspections. Diligently report permit compliance or non-compliance and take any necessary actions to sustain permit compliance. 2. Increase efforts to monitor vegetation trends. This information is needed to determine if *Forest Plan* objectives are being achieved and standards are being met. 3. Encourage permit holders to brush hog. Brush hogging appears to be a key to maintaining, or possibly improving, allotments' desirable forage vegetation. 4. Encourage permit holders (or seek funding) to lime, fertilize, and re-seed allotments (as necessary) to help move allotments towards desired future vegetative condition. 5. Seek additional money to fund the projects and personnel needed to administer permits and improve allotment conditions: either through appropriated dollars, Knutson-Vandenberg dollars, fee credits, or partnerships with non-profit organizations, communities, permit holders, etc. 6. Complete the appropriate level of environmental analyses and AMPs for all allotments lacking up-to-date documentation. This would result in multiple benefits: the ability to (1) issue term permits; (2) implement improvement projects; (3) allow use of fee credits to make improvements; (4) gain efficiencies in annual program administration (e.g. fewer permits to issue each year since ten year permits could be used). 7. Consider creating a standard/guideline that addresses exotic, invasive, non-native, and/or noxious weed species management. Given the increased knowledge about the adverse effects of exotic plant species, such a standard may be helpful for allotment management. **Prescribed Fire -- Beulah Savannah Monitoring** On August 7, 2000, five resource personnel monitored the results of prescribed burning that have been conducted in the Beulah Savannah since 1998 (see 21 page Beulah Savannah Report at fs.fed.us/r9/mnf/environmental/environmental_index.htm). The Beulah Savannah resides in the headwaters of the West Fork of the Glady Fork River. It is in Randolph County, five miles

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Monitoring Item	Results
	south of Glady, WV, and 20 miles north of Durbin, WV. It is part of the Little Beech Mountain Opportunity Area (#36.103), governed by Management Prescription 6.1 guidelines to maintain vegetation for species in the Black Bear and Wild Turkey Associations (*Forest Plan*, pp. 164-165). The ID Team addressed the following questions: • What, if any, vegetative changes have occurred in the savannah because of recent prescribed fires? • What effects have prescribed burns had on riparian areas and streambank stability? • Have prescribed fires been implemented as planned? If not, what changes were made and why? • Were prescribed fire management objectives met? Are prescribed burns having the desired effect? Why or why not? For example, some burns have been conducted during the green end of the burning window; take a close look at the effectiveness of these burns. • Was NEPA documentation completed for the prescribed burns? Where mitigation identified in the Decision Memo? If so, document whether mitigations were implemented as planned and had the expected results. • Are Forest-wide standards and guidelines being followed? Are changes or additions needed to standards/guidelines? If so, document rationale for changes or additions. • Are MP 6.1 objectives being met? Why or why not? • Are forest-wide and 6.1 standards and guidelines being followed? Are changes or additions needed to standards/ guidelines? If so, document rationale for changes/additions. Detailed responses to the above questions are provided in the Beulah Savannah Report, which is posted on the MNF website. From this monitoring, the ID Team made the following **recommendations**: 1. Consider amending the Wildlife Management Plan for the Beulah Savannah to include definitive objectives for prescribed burns. The objectives for managing the structure of vegetation in each area of the savannah could be narrowed and clearly stated. It appears that the objectives of prescribed fire in the savannah are not clear. Is the objective just to maintain an opening; is it to maintain grassy species, or what? 2. Map the perimeter of the savannah; delineate the open areas

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Monitoring Item	Results
	from the forested areas; and identify the areas that have been burned. Clearly identifying these boundaries would enable the Forest to determine how fires over the years are affecting their size and shape. 3. Set up monitoring that will help the Forest determine if the objectives for prescribed burns in the Beulah Savannah are met. No measurements have been taken of any vegetation type to know the quantitative impacts of previous burns. Also, no photo points have been established to document qualitative impacts. The team recommends that photo points be established and photos be taken from the same location, at the same time of year on a reoccurring basis (but not necessarily every year). Weather conditions should be documented and the size of vegetative patches could be measured with a GPS unit over time. 4. Identify a timeline for completing the projects that were listed in the Beulah Wildlife Management Plan and incorporate these projects into the District's program of work. 5. Burn areas in the savannah every other year or after two years instead of on an annual or 3-5 year rotation. This type of rotation should continue to reduce the vigor of undesirable vegetation and is more likely to eventually kill undesirable vegetation. Burning annually does not allow enough fuel to build up to sustain the intensity of fire needed to meet burn objectives. Burning on a 3-5 year cycle may allow burned (but not killed) vegetation to recover; disturbance must be sustained to prevent vegetation from sprouting back. 6. Consider using prescribed fire as a management tool in allotments where cattle grazing may be resulting in undesirable effects (environmental, social, or economic). Evaluate the site-specific conditions on each allotment (e.g. kind and amount of fuel, topography, condition of vegetation, etc.) to determine if prescribe fire would meet management objectives. It is unlikely that burning could be effectively implemented on allotments that had been grazed the previous year because fuel would not be adequate. Also, most allotments contain cool season grasses that are more difficult to burn in the spring or fall. 7. Investigate methods of management that will best kill autumn olive, St. John's wort, goldenrod, and multifora rose. Review literature and establish a monitoring protocol (e.g. photo points or measured plots, etc.) to evaluate how the Forest's fire management in the Beulah Savannah is

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Monitoring Item	Results
	impacting autumn olive, St. John's wort, goldenrod, and multiflora rose. The ID Team is not convinced that fire management as implemented on the savannah in the past will kill these species. The team noted fire management in the savannah has only killed the tops of these species. Adjustments in our fire management practices may be needed. Brush hogging, using herbicide, or mechanically cutting these species may work better than fire, or in combination with fire. 8. Consider mechanically cutting hawthorn before burning to increase fuel and the burn intensity. Would mechanical cutting hawthorn and trees be less expensive than prescribed fire? The team observed how fire had eliminated some hawthorn seedlings and hawthorn on the edges of the openings, but wonders if it is realistic to believe fire will thin larger hawthorn in dense stands without damaging residual hawthorn. More burns are needed to kill hawthorn, including sprouts. 9. When conducting prescribed fires for other projects across the Forest, identify the location for fire lines only after considering the topography, environmental conditions, and costs of creating them. Burn patterns and burn intensity are affected by multiple factors; depending on conditions, it may not be feasible to stay within planned boundaries, especially if the boundaries do not take into account the topography and aspect of the area being burned. 10. Consider revising *Forest Plan* standards to allow prescribed fire in areas that cannot be managed under other means of vegetative management. Currently, the *Forest Plan* does not allow prescribed fire in 6.2 areas. It may be something the Forest would want to consider using to maintain openings in areas such as those that are not easily accessible for mowing or brush hogging, or those that are not well suited for grazing. 11. Some apple trees in Area 2 could benefit from release. Coordinate with WVDNR to see if they would conduct the release. 12. Track the actual costs of prescribed burns so that they can be compared to the estimated costs. This would be helpful for *Forest Plan* monitoring and to determine the economic efficiency of conducting prescribed fires. In 1999, approximately $4,100 was spent to burn 141 acres of the Beulah Savannah. Is this the standard cost or have costs declined as personnel were trained and became more skilled?

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Monitoring Item	Results
	The team discussed whether it is more or less expensive to use fire instead of domestic grazing to meet management objectives. 13. Revisit the NEPA decision for prescribed fires in the Beulah Savannah. Determine if it is adequate, needs to be updated, or if a new decision is needed. 14. When the NEPA decision is revisited for the next burn, inform the public and provide them an opportunity to comment. 15. Review the Biological Evaluation and implement any changes necessary. Conditions do not appear to have changed, but the biological evaluation may need to be updated to address changes to the Regional Forester's sensitive species list. 16. Consider whether a control line needs to be created to avoid any impacts to riparian vegetation. Considering the minimal impact observed by the team, it may not be necessary. 17. Set up a meeting with WVDNR to discuss the findings from this monitoring trip and/or mail copies of the report for their information.
Management Indicator Species	**Black Bear** Populations of black bear are currently stable or increasing. Several measures are used to identify population trends for black bears, such as overall bear harvest, reproductive tract collections, teeth collections, and field studies. Collectively, these measures indicate that black bear populations across West Virginia and on the MNF have increased over time. Data collected from 1979 thru 2000 indicate that the number of bears killed in the State increased from 68 in 1979 to 1,317 in 2000. Although many factors influence bear kills (weather conditions, technology used to hunt bears, etc.), it is reasonable to infer from kill data that bear populations have increased. Reproductive data for 2000 had not been fully analyzed when the WVDNR 2000 bulletin was published, but data collected in 1999 indicated that 1999 was a very successful breeding year, especially for younger bears. Most bears that gave birth in early 1999 were three years or older and did not breed in the summer of 1999. This means that cub production in 1999 was probably high, indicating the likelihood of a higher yearling population in 2000. Cub births in early 2000 should have been low because of many first time breeders. This was supported by den checks in 2000 that showed 2.4 cubs per litter, a relatively low production rate

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Monitoring Item	Results
	(den checks occurred in the Mountain counties, where the majority of reproductive tracts are collected). Teeth collections have continued but had not yet been combined with similar data from previous years to establish life tables. Once done, the life tables will assist in modeling bear populations. Field studies were initiated by WVDNR in 1999, in part, to gather reproductive data from a rapidly growing bear population in the southern part of the State. Fifteen radioed sows should have given birth during the Winter of 2000. Most dens had already been located, and visitation was to begin in late February to gather reproductive data. Ten winter dens were examined in 1999—the ten females had given birth to 31 cubs, with litter sizes ranging from 2 to 5. Two sows with cubs found hollow trees as den locations, 2 preferred denning under brush piles, 4 denned under rocks, and 2 were in dig-outs under root-balls. This information is helpful in that it identifies the type of habitat preferred for dens. **Gray Squirrel** Gray squirrels were common in 2000, but not abundant. Gray squirrel populations are highly influenced by the amount of mast produced the prior year. Mast production in FY 1999 was adequate, but not as abundant as in FY 2000. **Varying Hare** Varying hare populations are thought to be stable. Varying Hare are not pioneering species; their populations are limited by the amount of spruce or spruce/beech habitat in the area their population is located. Although individual spruce trees are becoming more established in the understory of existing stands across the Forest, the acres of spruce forest type did not alter in FY 2000. **White-tailed Deer** Deer populations have been increasing on the MNF over time. The number of bucks killed per square mile in the 2-week traditional firearm buck season is used as an indirect measure of the deer population (WV Big Game Bulletin, 2000). This system is not a perfect measure, especially because weather, acorn production, and hunter access all influence the results; however, it has helped the Forest understand deer population trends. For example, Table 2, page 8 of the 2000 WV Big Game Bulletin states that the number of deer harvested from the MNF since 1996

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Monitoring Item	Results
	has increased from 3,186 to 4,135. The combined deer season harvest for 2000 was the sixth largest total deer harvest on record for West Virginia and a 14% increase from that of 10 years ago. **Wild Trout** FY 2000 monitoring data had not been synthesized by the time this report was completed. In FY 2000, the MNF had collected information for several streams within the Elk River Watershed and WVDNR had collected information in Red Run in Tucker County; Shavers Fork in Randolph County; North Fork of Cherry in Pocahontas County; and Bear Run in Greenbrier County. The raw data is available in the project file. **Wild Turkey** Although their population was slightly down in FY 2000 compared to past years--across the State and on the MNF--wild turkey populations appear to have increased noticeably since 1966. WVDNR data from spring and fall wild turkey harvests indicate that wild turkey kills have increased significantly from 1,346 in 1966 to 14,335 in 2000. Populations seem to have declined somewhat since turkeys harvested peaked at 19,488 kills in 1996; even so, the 2000 harvest was the seventh largest on record for the State. Turkey kills have been relatively stable since 1998 remaining between 14,145 and 14,335 kills per year. The gobbler survey conducted by WVDNR each year since 1983 has shown that the number of hens seen by survey participants is one of the best indicators of the wild turkey population. During the spring of 2000, the rate was the highest in 6 years and indicated a substantial increase in wild turkey numbers. The WVDNR Bow Hunter Survey also has accurately estimated wild turkey population trends every year since the survey began in 1995. The survey suggested a significant increase in the wild turkey population in 1999. Although 2000 survey data had not been analyzed by the time of the WVDNR 2000 bulletin was published, it is expected that it will depict a decline in the statewide wild turkey population. Including the Bow Hunter Survey data to the group of population indices for wild turkey and other wildlife species serves as a vital check on wild turkey population trends that cannot be obtained solely from harvest data. Annual harvest information can be affected by weather conditions, hunting pressure, etc., so measures like this survey are important in assessing long-term habitat and population changes.

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Monitoring Item	Results
	The 2000 brood count was only 207 in the State, 30% below the 10-year average (307). The count was in sharp contrast to the 744 broods seen in 1999. Although the count was down in all regions of the State, the decline in sightings was greater in the Eastern Mountains and Western counties than elsewhere. Weather was less than ideal during the nesting and brood rearing period during the year 2000, but a gradual decline in the adult hen population may have been a contributing factor. Although there was an abundance of hens during the nesting and brood rearing season, many of these were juveniles, and juvenile hens contribute little to brood production. WVDNR research has shown less than 8% of the juvenile hens successfully produce a brood while one-third of the adult hens are successful. The number of wild turkeys seen by hunters that completed a survey form after hunting in 2000 was 8% below the 5-year average and 35% lower than the 20.46 seen in 1999. Due to the good mast conditions in 2000, it is likely that turkey populations are larger than these surveys indicate. The abundant mast conditions made it harder for hunters to find turkeys in the 2000 fall season. Because food was so widespread, birds were not concentrated; they were widely distributed. Even during the winter months 2000-2001, turkeys were not frequenting fields and other openings as often as they do when mast is scarce.
Migratory Birds	**Breeding Bird Surveys** Eight breeding bird surveys are conducted in cooperation with the WV University to assess nesting success on the Forest. FY 2000 data were not obtained in time for this report. **Brooks Bird Club Surveys** The BBC conducts an annual bird banding and survey project in the vicinity of Dolly Sods Wilderness (August-September) during the fall migration, the results of which are summarized in the Allegheny Front Migration Report, Fall Migration 2000. **Point Counts** Point count routes have been maintained on the MNF for several years to monitor migratory and resident birds. Data from these routes have not been synthesized recently, but 2000 data from 8 of 60 routes, and previous years data, can be obtained from DNR.

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Monitoring Item	Results
Managing for Endangered & Threatened Species	**Red Oak Knob Radio Tower – Guy Wire Mortality Survey** When the special use permit for the Red Oak Knob Radio Tower was issued, some people expressed concern that migratory bird mortality might result. In response, the Gauley District initiated surveys to check for signs of mortality. The following are FY 2000 results: (23 May 2000) A spring check for migratory bird guy wire strike mortality was conducted (Martin, 5/23/2000). No dead birds or bird parts were found in the surrounding area of the radio tower. Various surveys are conducted for endangered, threatened, and sensitive species on the Forest throughout the year. These surveys may be accomplished to monitor the status of known populations or to search for new populations, such as in areas that are proposed for ground disturbing activities. The following are just some of the surveys that were conducted in FY 2000: **Bald Eagle, *Haliaeetus leucocephalus*** Bald eagle populations on the MNF are stable. One bald eagle nest in Grant County is known to occur on the Forest and has been monitored by the WVDNR for a number of years. In 2000, two young of this threatened species were observed in the Grant County nest (Stihler, 2001). **Cheat Mountain Salamander**, ***Plethodon nettingi nettingi*** The population trend for the threatened Cheat Mountain salamander (CMS) depends on the particular site being studied. The following are some FY 2000 monitoring results for CMS. Trail Study in Pocahontas County Studies of the impacts of trails through Cheat Mountain salamander populations were continued in 2000 (Stihler, 2001). Two trails were examined in the State, one of which was in Pocahontas County on the MNF. The trail in Pocahontas County was visited within 48 hours following a rainfall. In 2000, it was visited twice, once on July 19 and on September 1. The trail was walked, and all salamanders in the trail or within one meter on either side of the trail were examined. Salamanders were captured, measured for snout-to-vent length, weighed, and sexed. Reproductive status was also noted. All salamanders were released.

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Monitoring Item	Results
	Salamander species observed at the trail included 14 Cheat Mountain salamanders, one wehrlei salamander, one redback salamander, and one mountain dusky salamander. Salamanders were only found at the edge of the trail; no salamanders were observed in the trail. To date, the only species of salamander that has been recorded to cross any of the trails Dr. Pauley has monitored in the State is wehrlei salamanders. Bear Heaven and Gaudineer Buffer Studies A new study was initiated in 2000 to gather data regarding what constitutes an adequate buffer zone around Cheat Mountain salamander populations (Stihler, 2001). The effect of roads through Cheat Mountain salamander populations was used to represent habitat disturbance. One study site was near Bear Heaven (Randolph County) and the second site was on Gaudineer (Pocahontas County). Each study site consisted of ten transects on both sides of the road (for a total distance of 0.8 km) that extended from the edge of the road 20 meters into the forest. Ground searches were conducted for salamanders at two-meter intervals along each 20-meter transect. Soil temperature, air temperature (at ground level), and relative humidity (at ground level) were recorded at each two-meter interval. Data collected to date are preliminary, and it will be necessary to continue this study through at least 2001 to obtain meaningful results. Timberline Ski Slope Study Dr. Pauley also continued to evaluate the impacts of a ski slope at Timberline Four Season Resort that is located both on Timberline and MNF lands (Stihler, 2001). Four visits are usually made to the study site each year from May through October to examine potential effects of the ski slope on a population of Cheat Mountain salamanders. The first (May) and last (September or October) visits involve an analysis of species present. Four transects are examined in the study area. Two on a ridge and two on a mountain slope. There are 43 quadrants positioned along the 4 transects, 10 adjacent to the slope (impact sites) and 33 not adjacent to the slope (non-impact sites). Gender, size, and reproductive status of P. nettingi are recorded. Reproductive status is noted.

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Monitoring Item	Results
	Environmental data are collected during the second and third visits. These data consist of soil temperature; air temperature (at ground surface); relative humidity (at ground surface); soil pH and percent of moisture; and litter weight and percent of moisture. FY 2000 was the fourteenth year for this study. The ski slope appears to have a negative impact on this population of Cheat Mountain salamander. In the impacted sites, relative humidity, soil moisture, litter weight, and litter moisture are lower than in the non-impacted sites. Air and soil temperatures are higher in the impact sites than in the non-impacted sites. **Indiana Bat, *Myotis sodalis* &** **Virginia Big-Eared Bat**, ***Corynorhinus townsendii virgininianus*** The trend for these species depends on the cave being monitored. The WVDNR has monitored the following caves in the winter to assess population trends of various bat species, including the Indiana bat and Virginia big-eared bat (Stihler, 2001): Bear Heaven (21 January 200) No Indiana bats were found in this cave, but two Virginia big-eared bats were observed. Bowden (21 January 2000) Neither Indiana bats nor Virginia big-eared bats were found in this cave. Cave Mountain (9 March 2000) No Indiana bats were found in this cave, but one Virginia big-eared bat was seen. Two Lick Run (14 January 2000) Three Indiana bats were found in this cave, but no Virginia big-eared bats were observed.

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Monitoring Item	Results
	WVDNR also counts Virginia big-eared bats in the summer: Arbogast/Cave Hollow In June 2000, 618 Virginia big-eared bats were counted; this figure represents a 0.3% decline from 1999. Cave Mountain The number of Virginia big-eared bats counted in June 2000 was 471, a 17.1 decrease since 1999. Peacock An increase of 3.7% was observed in June 2000 as compared to 1999 because 858 Virginia big-eared bats were counted. **WV Northern Flying Squirrel, *Glaucomys sabrinus fuscus*** The WVDNR helps monitor this endangered flying squirrel's (WVNFS) populations on the Forest. Populations vary from site to site and have fluctuated over the years. Between July 1999 and September 2000, WVDNR captured a total of 30 WVNFS (14 males, 13 females, and 3 of unknown sex) from the following locations (Stihler, 2001): Briery Knob Three males, two of which were adults, were captured at this site. Canaan Heights One adult female was observed at this site. Deacon Run Three males, two females, and one of unknown sex were noted. McGowen Mountain One adult male and two adult females were captured at this site. Mikes Run Two males and two females were captured at this site. North End Black Mountain One adult male was found. This was a new site in Fiscal Year 2000 and was greater than 1.0 mile from a known capture site. Red Run One adult female was captured at this site.

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Monitoring Item	Results
	Sharp Knob – Brush Camp Low Place One adult female was captured at this site. Stuart Knob One adult of unknown sex was captured at this site. Tygart Headwaters Three males, three females, and one of unknown sex were found. Williams River – Day Run One male and one female were captured at this site. Early Bird Timber Sale When new information about WVNFS habitat use was identified in FY 2000, the Forest redefined some elements of suitable habitat and began monitoring approved projects to ensure suitable habitat for WVNFS was being protected. For example, on April 29, the South Zone Wildlife Biologist went out to the Early Bird Timber Sale (which had already been marked) and determined that one unit needed to be remarked to ensure that impacts on WVNFS habitat would be avoided; this unit was remarked on May 22, 2000. **Running Buffalo Clover, *Trifolium stoloniferum*** The WVDNR has been surveying populations of this endangered plant, both on and off the MNF, in an effort to promote its recovery. Fourteen sites typically are monitored on the MNF, but only 13 were monitored in 2000 (Harman, et. al, 2001). Monitoring in 2000 indicated that three populations of this species have significantly decreased since 1999, even though the habitat has remained unchanged (McGee Run, Shaver's Fork, and Upper Rock Camp Run). Two populations have continued a slow decline in rooted crowns with no apparent change to the habitat (Baker Sods, and Hoelick). No sites had increased beyond a normal fluctuation for this species. McGee Run-Back Fork Tributary (12 June 2000) In 2000, the population had its lowest count since it was found in 1995. In 1995, 1450 rooted crowns were seen, in 2000, only 798. There were no apparent changes in the habitat.

Table B. FY 2000 monitoring conducted to assess diversity of vegetation & wildlife.

Monitoring Item	Results
	McGowan Mountain In 2000 and 1999, 4 rooted crowns were counted. The plants were stunted and not very healthy. Shaver's Fork Flood Plain (28 June 2000) This site was first located in 1999 and there were 48 rooted crowns. In 2000, the count dropped to 26. Shaver's Mountain (20 July 2000) This population has decreased from 665 rooted crowns in 1999 to 283. There are no apparent changes to habitat. Upper John's Run/Rattlesnake Run (1 August 2000) In 2000, this population had 532 rooted crowns, up from 401 in 1999. Upper Rock Camp Run (30 June 2000) In 2000, there were 43 rooted crowns, down from 318 in 1999. **Shale Barren Rockcress**, ***Arabis serotina*** In 2000, WVDNR monitored four sites of this endangered species on the MNF (other populations of this species are monitored on the MNF once every five years). Two populations had increased since 1999 and two had declined (WVDNR 2001): Blue Bend No rosettes or bolts were found in 2000, as compared to 8 rosettes and 2 bolts in 1999. This lack of rosettes or bolts is not unusual, however, since none were found during 1997, 1995, or 1988. Lower White's Draft Shale Barren One rosette and no bolts were observed in 2000. This was down from 7 rosettes and 6 bolts in 1999. Upper White's Draft Shale Barren Two rosettes and 11 bolts were found in 2000. This was up from the 0 rosettes and 8 bolts in 1999. Waid's Draft Shale Barren Five rosettes and 2 bolts were found; neither was noted in 1999.

Table B. FY 2000 monitoring conducted to assess diversity of vegetation & wildlife.

Monitoring Item	Results
Protecting Sensitive Species	**Small-whorled Pogonia, *Isotria medeoloides***
	Information for these species is not collected from the Forest every year. The next reporting for theVirginia spirea is FY 2001.
	Virginia Spirea, ***Spiraea virginiana***
	Virginia spirea is monitored every other year and won't be monitored again until 2001.
	Biological Assessment for T&E Species
	New information concerning endangered, threatened, and sensitive species has been compiled in the literature since 1986, when the current *Forest Plan* was approved. In FY 2000, the MNF commenced a biological assessment (BA) to evaluate state-of-the-science information regarding endangered and threatened species. The BA will help the MNF 1) determine if existing standards and guidelines must be adjusted or additional mitigation measures are needed to protect endangered and threatened species, 2) ensure that management decisions will employ state-of-the-science information regarding these species, and 3) provide a basis for a *Forest Plan* amendment, if one is needed.
	Six Forest Service biologists and a botanist assisted in writing the BA. The individual with the most expertise for a given species served as the primary author for that section which was then peer reviewed by the rest of the team and other experts. The final BA should be completed in FY 2001 and consultation with the US Fish and Wildlife Service will be initiated as needed. If a *Forest Plan* amendment is needed, the public will be encouraged to participate in its development.
	Peregrine Falcon, *Falco peregrinus anatum*
	Falcons are sensitive species that are not commonly found on the MNF. Only one peregrine falcon nest is known to occur on the MNF. Monitoring of fledglings over several years indicates that the population is stable.
	Cerulean Warbler, ***Dendroica cerulea***
	To determine presence or absence of cerulean warblers in a timber sale area before harvesting, the Gauley District conducted the following monitoring. Such monitoring is likely to be completed after harvesting.

Table B. FY 2000 monitoring conducted to assess diversity of vegetation & wildlife.

Monitoring Item	Results
	(15 June 2000) The Gauley District Wildlife Technician played a Cerulean Warbler tape at two locations – one on the northern portion and one on the southern portion of Big Ditch Timber Sale Unit 19 (Martin 2000). While there was no response at the northern location, two Cerulean Warblers were heard at the southern portion of the stand. Although the tape did not draw the birds within visual range, the songs were distinct and distinguishable from Black-throated Blue Warblers that were also heard at the same location. The tape was played approximately every ¼ mile, but no other Cerulean Warblers were heard until the northern section of stand 31 was reached. Again, the birds were not viewed, but their song was distinguishable from a distant Black-throated Blue Warbler. **Ammon's Moss**, ***Syntrichia ammonsiana*** WVDNR found five of this sensitive species subpopulations in FY 2000. There were some scrapes on the rock walls at subpopulations 2 and 3 indicating that some collecting of the moss was done. There were also initials etched in moss at subpopulation 2. This however, did not appear to have been directly on the *S. ammonsiana*. Subpopulation 3 appeared more thinly populated in 2000 (in addition to the small section that was scraped off the wall). However, the populations appeared healthy and covered close to the same area as what was reported in 1999. As in 1999, subpopulations 4 and 5 were not relocated. Since all the sub-populations, except one, are difficult for to access, these populations don't appear to be threatened from the public. However, collecting by bryologists could be a threat. The subpopulation easily accessible by the public appeared healthy; however, it should be monitored to evaluate the threat from increased public use. **Showy Ladyslipper Orchid**, ***Cypripedium reginae*** Katharine Gregg, Professor of Biology at WV Wesleyan College, has conducted detailed monitoring of *Cypripedium reginae* from 1987-1999 to discover trends in population dynamics and factors important to viability (Gregg, 2001). The following reflects Professor Gregg's 2000 monitoring results.

Table B. FY 2000 monitoring conducted to assess diversity of vegetation & wildlife.

Monitoring Item	Results
	(16 June 2000) The site was visited during the flowering period and the following information was collected: • Height data on a "cohort" of flowering size stems; • Photographs of the flowers; • Soil for texture analysis; • PH measurements; and • Slope and elevation data. Mean stem height of the stems monitored since 1988 was 60.8 cm, 2.8 cm taller than in 1999, but not significantly taller than in recent years. These recent heights, however, were significantly taller than those following the severe herbivory in 1987 and 1988. The number of flowers was somewhat lower than in 1999--116 total flowers produced versus 131 flowers in 1999 (see Data summary for population of *Cypripedium reginae*, 1987-2001). Since about 1993 the estimated number of live ramet axes at Big Draft has been relatively stable between 194 and 204. However, flowering reports from the 1970's and 1980's and Gregg's calculated estimations based on percentages of ramets flowering here and elsewhere, indicate that there was in those years a much larger population that very likely exceeded 800 or 900 stems. Herbivory by deer was probably the main cause of the marked reduction in stem numbers over the relatively short period of about 20 years. Although the site is now fenced against deer, the Forest shouldn't become complacent about the current "stability." Other environmental factors, like creek erosion and competition by trees and shrubs, could also threaten the population. Professor Gregg is drafting a paper that will present information on many aspects of the population's biology, including effects of severe herbivory (and probably drought) on stem heights, photosynthetic area, flowering and fruiting; recovery from herbivory; mortality and recruitment data, intrinsic rate of growth, life state transitions, etc. The manuscript will also compare these parameters with another population known to occur in Canaan Valley. The manuscript may be ready for peer review in 2001.

FOREST HEALTH PROTECTION

The following describes FY 2000 monitoring that was conducted to gauge how well Forest health is being protected (*Forest Plan,* p. 40).

Table C. Forest health protection monitoring in FY 2000.

Monitoring Item	Results
Beech Bark Complex	Beech bark scale was found in portions of the Williams River drainage on the Marlinton and Gauley Ranger Districts in FY 2000. This scale insect results in transmission of several fungal diseases to beech trees, which normally have a fatal effect on the tree, over a period of several years. Beech bark disease has resulted in mortality of many beech trees on the Greenbrier Ranger District, for a number of years.
Chestnut Blight	(July 2000) District personnel and Youth Conservation Corp. employees monitored the survival of chestnut seedlings of a 3-acre plantation, which had been planted in 1999 in cooperation with Glenville State College and Richwood High School students (YCC, 2000). These acres were planted using disease resistant seed obtained through cooperation with the American Chestnut Foundation. The survival rate of the planted chestnut was good (80%), with many of the trees growing out of the protective tree tubes to a height of over 4 feet. The District noted that the project had been implemented as the Perry Ridge Decision Memo directed; that the acres matched; the results were consistent with those anticipated; and that all aspects of the decision had been implemented. They also noted that implementation met *Forest Plan* objectives, was consistent with *Forest Plan* standards, and that the activity met the terms and conditions identified in the Biological Opinion.
Gypsy Moth	During Fiscal Year 2000, and for the first time since 1995, the gypsy moth had a noticeable impact on the appearance and forest health of lands within the MNF. Approximately 12,250 acres of National Forest land were heavily defoliated and 8,360 acres experienced moderate defoliation, according to aerial survey results. Private and state lands within the proclamation boundary were also affected. The defoliation occurred on the eastern side of the Forest on the Potomac, Greenbrier, and Marlinton White Sulphur Ranger Districts. Areas including the Lake Sherwood and Seneca Rocks recreation areas experienced defoliation. Plans were made to survey defoliated areas to determine populations and the degree of defoliation that could be expected in FY 2001. Since 1995, natural factors including natural enemies of the gypsy moth kept populations of gypsy moths at low levels. An on-going long-term study on the effects of gypsy moth and spray treatments continued in 2000 on portions of

Table C. Forest health protection monitoring in FY 2000.

Monitoring Item	Results
	the forest. This study is being funded by the Forest Service and conducted by researchers at WVU and other universities; it is enhancing the Forest's knowledge of this pest, its natural enemies, and the effects of control methods.
Wooly Adelgid	The hemlock wooly adelgid has been noticed on low elevation hemlock trees within the national forest proclamation boundary, but so far, has not been noticed on MNF land.
Forest Health Workshop	A workshop was conducted to train field-going MNF employees in recognizing and detecting potential forest health problems.
Multiflora Rose & Autumn Olive	About 55 acres were mowed on the Whitmer (d3) and the Shearer South, Rimel, Gay-Sharp and Hoover Allotments (d4) to help eradicate multiflora rose and autumn olive.

AIR QUALITY

The following describes FY 2000 monitoring that was conducted to gauge how well MNF management is protecting air quality from degradation (*Forest Plan,* p. 40).

Table D. Air quality monitoring in Fiscal Year 2000.

Monitoring Item	Results
Ozone	Ozone is monitored at two sites on the MNF. Vegetation at higher elevations appears to be exposed to more ozone than vegetation growing elsewhere.
Acid Deposition	Acid deposition is monitored at two sites on the Forest. Results indicate that sulfate and nitrate deposition continues to be high. The cumulative impact of years of high deposition continues to have negative impacts on water chemistry and aquatic organisms in headwater streams. Acid deposition is also affecting the nutrient levels in some soils, especially at higher elevations.
Visibility	Visibility has been monitored since 1987. Results of photographic, optical, and aerosol sampling indicate that visibility impairment is greatest in the summer months. The best visibility conditions occur in the winter. Sulfate particles comprise the majority of the fine particle mass thought to cause the visibility impairment.

WATER QUALITY

The following describes FY 2000 monitoring that was conducted to gauge how well MNF management is protecting watershed conditions from degradation (*Forest Plan,* p. 40).

Table E. Monitoring of watershed conditions in FY 2000.

Monitoring Item	Results
Hillslope Hydrology Study	The Hillslope Hydrology study is an on-going effects monitoring project that was started in 1999. The study grew out of the MNF's sediment strategy, which began in the mid-1990's, to answer critical questions pertaining to sediment in the Forest environment. The study's purpose is to answer a number of questions relating to sediment and hillslope hydrology processes. Specifically, the study is designed to address questions on sediment delivery to channels, sources of sediment in channels, hillslope attributes that control sediment delivery, effects of roads on sediment delivery to channels, streamflow/sediment relationships, and channel morphology effects and relationships as affected by road construction and large runoff events. The study employs a paired watershed approach, in which one watershed will undergo road construction and timber harvesting, and the other will remain undisturbed as a reference watershed. Both watersheds were instrumented for data collection, starting in 1999, and at least two years of pre-treatment data will be collected from both watersheds before road construction and harvesting commence in the treated watershed. In FY 2000, pre-treatment data collection continued in both study watersheds. Data being collected includes such things as sediment delivery to the watershed channel network, streamflow, suspended sediment and turbidity, and detailed GIS mapping of the watersheds and entire channel systems. Road construction and timber harvesting are expected to commence in 2001. This is a multi-year monitoring study, and data collection is expected to continue for after the start of management activities.
Road Rehabilitation	Monitoring was done to determine the effects of roads on watershed and stream channel stability, and on erosion and sediment conditions. Emphasis in this monitoring was put on identifying roads for improvement and restoration or closure. Specifically, roads were monitored in the Aaron's Run and Hobson Run Watersheds, and in the Upper Williams River Watershed. Results indicated that much of the Forest road system is well-designed and maintained, and has minor and acceptable effects on the aquatic ecosystem. However, some roads, especially some older system roads and old woods roads not on

Table E. Monitoring of watershed conditions in FY 2000.

Monitoring Item	Results
	the system, may be poorly designed and/or constructed, with inadequate maintenance, or poorly located in areas of unstable slopes, sensitive soils, or too close to streams. Monitoring indicated that a variety of adverse effects have resulted from poorly designed, maintained or located roads. Some of these effects may include culvert plugging or washout, risk of channel relocation, increased sediment delivery to streams, channel and bank erosion, downstream fine sediment and bedload deposition, and aquatic habitat impairment. Roads in Aaron's Run, Hobson Run, and the Upper Williams River Watershed were identified for improvement, closure, or obliteration to correct known problems. Also, monitoring of a variety of ongoing road rehabilitation projects was conducted in FY 2000 (see field notes and road improvement contracts in Engineering files). Monitoring was done to ensure artificial stream barriers were removed, aquatic habitat connectivity was improved, and the risk of stream crossing failure during future flood events was reduced. Road rehabilitation projects replaced under-sized culverts with larger culverts or large bridge-type structures that span the active stream channel. These improvements should help provide for a more fully functional stream channel–physically and biologically.
Trail Improvements	(1 September 2000) Laurel Run and Props Run bridge projects were reported to be delivering a lot of sediment into these streams. Water samples were taken, but they did not show increased sediment levels. Sections of both of these trails were extremely muddy and there was not adequate sediment control. To address these findings, hay bales and silt fencing were installed by the bridge contractor. Also, see monitoring done for Props Run as described in Recreation section of Chapter II.

II. MONITORING RELATED TO MULTIPLE BENEFITS TO PEOPLE

WILDERNESS

The following describes FY 2000 monitoring that was conducted to gauge how well MNF management is preserving Wilderness attributes for which the areas were designated (*Forest Plan*, p. 37).

Table F. Monitoring of Wilderness attributes in FY 2000.

Monitoring Item	Results
Acres Meeting Standards	In FY 2000, 69 of the 78,000 acres of Wilderness on the MNF met management standards. About 90 acres of Wilderness were covered by approved fire plans.
Infrastructure Data Collection	An emphasis was placed on collecting and entering all required data into the Infra Wilderness module in FY 2000.
Leave No Trace Education	In FY 2000, 3,900 contacts were made to educate visitors about the "Leave No Trace" land ethic.
Limits of Acceptable Change	Limits of Acceptable Change monitoring conducted for the Cranberry Wilderness in Fiscal Year 2000 indicated that campsites along popular trails (which were first inventoried in 1991 during a study by WV University) showed signs of significant change. Campsites on less popular trails were difficult to find (see LAC Monitoring Binder at Gauley District). During WV University's 1991 monitoring, several wildernesses on the Forest were inventoried, one of them being the Cranberry Wilderness. Campsites within the Wilderness were given a site number and USGS coordinates were used to document their location. Forms were developed so that campsites in the Wilderness could be inventoried and changes to each site could be tracked over time. The inventory assessed the following: ▪ Distance to closest trailhead ▪ Vegetative cover ▪ Mineral soil increase ▪ Root exposure ▪ Volume of trash present ▪ Number human waste sites ▪ Distance to water ▪ Tree damage ▪ Cleanliness ▪ Development ▪ Screening from trail ▪ Social trails These same items were inventoried in FY 2000 and compared with 1991 results.

RECREATION

The following describes FY 2000 monitoring that was conducted to gauge how well the MNF is:

- Managing the spectrum of recreation opportunities that exist on the Forest and emphasizing recreation activities that require a large land area, such as hiking or hunting, and facilities to support that use.
- Developing and maintaining open communication and understanding with the public.
- Permitting use of National Forest land by others, under special use or lease authorities, that is compatible with National Forest goals and objectives and will contribute to the improved quality of life for local residents (*Forest Plan*, pp. 37 and 39-40).

Table G. Recreation monitoring in FY 2000.

Monitoring Item	Results
Managing the Spectrum of Recreation Opportunities	**Costs of Management** For three years the Forest has been collecting and entering infrastructure and program operation and management data into Meaningful Measures and Infra. When these systems are completely populated with data and integrated with the GIS database, the Forest will have the best cost data the agency has ever had. These data will enable accurate reports on deferred maintenance needs, annual operations, and annual maintenance costs. These data will allow comparisons across the forest from district to district and between the MNF and other Region Nine forests. The data on developed recreation that have been entered and leveled to date shows that the MNF is firmly within the center of operation and maintenance costs across Region Nine. They further show that Region Nine has been getting less funding as compared to other Regions, particularly those out west. This more accurate look at funding and needs could change funding formulas to assure a more even dispersal across the country. **Local Economic Parameters** No definitive forest-wide study of the benefit of National Forest lands and facilities to local economies has been conducted. However, several counties have recognized the benefits of National Forest lands to local tourism economies. Pocahontas County, for example, has a long history of working closely with the MNF in tourism promotion efforts such as the Highland Scenic Highway brochure, trail publicity, and so on. There is potential to expand MNF working relationships with other counties and government agencies.

Table G. Recreation monitoring in FY 2000.

Monitoring Item	Results
	Trail Monitoring - Props Run Trail Plans are underway to begin a multi-year monitoring program on selected trails with resource concerns. Also, as part of the Forest's formal monitoring efforts in FY 2000, several resource specialists participated in the monitoring of the Props Run Trail on August 3, 2000 (see 26 page report at fs.fed.us/mnf/r9/environmental/environmental_index.htm). The Props Run Trail is a 6.6-mile trail that travels from FR 24 to the base of Gauley Mountain at Slatyfork, WV (Map 1, Vicinity Map, in the project file). It is in the Props Run Opportunity Area (OA #46.103) and governed by Forest-wide and Management Prescription 6.1 direction of the *Forest Plan*. During monitoring, the ID Team addressed the following: • What was the condition of the grade before improvements were made? • What improvements have been, or are yet to be made to the grade? How will the work be accomplished? • Were the improvements to the Props Run Grade implemented as planned? If not, why? • Were the needs identified for the Props Run Trail improvements met? • Did the trail improvements (e.g. broad based dips, ditches, and out-sloping) made during phase I of the Props Run project result in the desired effects? If not, why? • Are the trail improvements likely to hold up under increased mountain bike use? • Is phase II bridge construction having the expected effects? If not, why? • Were public safety mitigations implemented during timber harvesting activities, and did they have the desired effect? • Did Props Run Trail improvements result in the same effects to the recreational experience as anticipated on pages 24-25 of the Trails EA? • When was timber harvesting initiated and completed along the Props Run Trail? • Did timber harvesting along the Props Run Trail have the anticipated soil and sediment effects?

Table G. Recreation monitoring in FY 2000.

Monitoring Item	Results
	• Did timber harvesting cause visual impacts to the Props Run Trail? • Was the actual cost of improving the Props Run Trail consistent with the anticipated cost? If not, why? • Are there *Forest Plan* standards that need to be revised, deleted, or created to address particular issues? • What Forest-wide standards and guidelines were applicable to this project? Were they followed? If not, why? Are changes or additions needed to these standards/guidelines? If so, document rationale for changes or additions. • Does this project help meet the Management Prescription (MP) 6.1 objectives? • Which MP 6.1 standards and guidelines were applicable to this project? Were they followed? If not, why? Are changes or additions needed to these standards/guidelines? If so, document rationale for changes or additions. Detailed answers to these questions are provided in the Props Run Report on the MNF website. As a result of this monitoring, the ID Team made the following general **recommendations** to consider for similar types of trail improvement projects: 1. In the future, schedule the implementation of projects so that one phase of a project does not damage the improvements made during a previous phase (e.g. some drainage improvements completed in the first phase of the Props Run Trail improvement project were damaged by equipment that was used in the second phase). Such scheduling will save time and money and minimize the potential for unwanted effects to natural resources. 2. In future projects, excavation material should be seeded or sediment control measures (e.g. properly installing silt fence, covering material with a tarp or fabric mat, etc.) specified in the contract and enforced to prevent adverse sediment effects to streams. 3. When addressing public concerns in NEPA documents, clearly state how proposed activities will affect natural resources. For example, the Props Run Timber EA implied, instead of stating clearly, that helicopter logging would result in acceptable visual quality effects.

Table G. Recreation monitoring in FY 2000.

Monitoring Item	Results
	4. When cutting trees along trails (or roads open to public use) in future sales, mark the cutting unit boundaries so that the paint is not easily visible from the visually sensitive area. This was done for the cutting units along Props Run Grade and prevented adverse visual effects. 5. Have ID Team members and those who implement projects review the guidelines regarding use of special management practices in trout streams during Oct. 1 to June 1. Ensure that action is taken prior to implementation to address them. 6. Work with the Forest Botanist to develop a seed mixture that favors native species as much as possible but also will provide adequate protection to disturbed areas. 7. If a project is temporarily delayed, ensure disturbed soils are not left exposed (e.g. seeded promptly or somehow covered to prevent soil movement), especially when within a stream's filterstrip. 8. Consider creating standards/guidelines for horseback and mountain bike use; think about rewording the existing *Forest Plan* guideline regarding trail density to make it clear that trail densities can be greater than 1 mi/sqmi if site-specific conditions deem it appropriate. The following table summarizes **specific** **recommendations** that the ID Team feels should be followed-up on **in regard to Props Run improvements**: 1. Assess rider safety after phase II and III are completed. 2. Assess rider satisfaction after the trail has been opened to use. 3. Correct existing sediment impacts by completing phase II. 4. Identify the Props Run Grade as a system trail from FR 24 to Old Field Fork after phase II and III are completed. 5. Facilitate the building of the connector trail from ERTC to Props Run Trail. 6. Provide a safe, well-identified, multi-purpose trail that can support increasing recreational use without causing sediment to be delivered to nearby Props Run by completing phase II and III. 7. Install signs before the trail is reopened to public use to make the trail easier to find and inform users that it "shouldn't be ridden when the trail surface is wet."

Table G. Recreation monitoring in FY 2000.

Monitoring Item	Results
	8. Develop trailheads. 9. Try to prevent the 75-80 foot flow of water that is occurring just south of the Props Run crossing. Consider having the bridge contractor address. 10. Widen, deepen, and rock the two small dips north of the Props Run Bridge site to ensure they will function properly for several years. 11. When bridge construction is completed and heavy equipment is not using the south end of the trail, (1) grade, or otherwise reshape the trail's tread, (2) reestablish adequate drainage dips, and (3) reseed, mulch, etc. as needed. 12. Once phase II is complete, place boulders at south entrance to prevent vehicle use. 13. After phase II, assess whether the trail needs to remain closed for another year. If the trail can be opened the same year that work is completed, write a note to the file to explain why a growing season following reconstruction isn't needed. 14. Complete phase III to provide challenges in the trail (e.g. logs and rocks). 15. To verify the actual effects of activities implemented along the Props Run Grade, summarize and interpret the sediment data that were collected from Props Run. If needed, identify any changes that should be made for future projects to improve project design or methods of collecting data. 16. Have the Forest Hydrologist or Aquatic Ecologist review the condition of phase I improvements to--(1) see whether they are having the anticipated effects and (2) determine whether additional specialists involvement is needed. 17. While the bridge construction is being completed, install staked bales (sediment traps) at existing dip locations south of the Props Run crossing. 18. Have sediment control devices removed once disturbed soils revegetate. 19. Monitor grass seeding after phase II to ensure grass coverage is adequate to prevent erosion and minimize sediment delivery to Props Run. The team was concerned that seed might not be established by the end of the growing season. 20. Once phase II has been completed, ensure drainage dips south

Table G. Recreation monitoring in FY 2000.

Monitoring Item	Results
	of the Props Run crossing have been protected with flat rocks or gravel as needed. 21. Insert this monitoring report in the project file to explain why changes were made to the bridge design after the decision notice was signed. 22. After phase II, assess visual impacts and determine if objectives have been met. 23. Check with the Forest Lands Staff Officer and ERTC to determine the status of gaining ROW access across ERTC property and public parking facilities. 24. Complete a letter for the file to explain why access across Beckwith property is not being pursued and a new location is being considered. Assess impacts. 25. Review historic sites to verify that heritage resource sites were protected. 26. Consider videotaping the trail to compare pre- and post-trail conditions.
Permitting Use of Land	**Inspections** Field visits and inspections were conducted for approximately 20 of the Forest's special use permits to ensure permit holders were in compliance with the terms of their permits (see special use files). Also, some recreation events that occurred on the Forest were monitored to insure compliance with the operating plans. **Private Development on National Forest** Monitoring, for the most part, indicates that the developed recreation sites currently under concession management are having desirable results. There may be potential for further development of interpretive services in the NRA under special use authority. Recreation special uses continue to be an important part of offering a diverse spectrum of opportunities to the public. In these days of reduced funding, private development and management is an important asset to enable the Forest to meet its recreation responsibilities to the public and local economies. Through private funding the Forest can provide better experiences and a wider range of opportunities than could be provided by the agency alone.

TIMBER PRODUCTION

The following table describes FY 2000 monitoring that reflects how well the Forest is:

- Managing the vegetation on the Forest according to sound practices to provide a sustained yield of timber, benefit other resources, and support the local economy with concern for environmental protection and cost efficiency.
- Using silvicultural systems and all harvest methods, but emphasizing the use of even-age management to provide long-term wildlife and timber quality benefits.
- Providing a stable supply of Forest products to dependent wood using industry.

Table H. Monitoring of timber production in FY 2000.

<table>
<tr><th>Monitoring Item</th><th>Results</th></tr>
<tr><td>Managing Vegetation/Using Silvicultural Systems/Providing Forest Products</td><td>
Firewood
In 2000, 292 firewood permits sold on the Forest for a total of $2,966.97. About 284 MBF (473.5 CCF) were cut as a result.
Timber Sale Volume
Approximately 15 MMBF (25,100 CCF) was offered in FY 2000.
Regeneration Success
Regeneration success surveys (surveys conducted after the first, third, and sometimes fifth year after harvest) were conducted for 2,183 acres of regeneration units. These acres were surveyed to ensure adequate regeneration had established, or to show any need for planting to gain satisfactory stocking on the site.
Acres Harvested by Harvest Method
<table>
<tr><th>Harvest Method</th><th>FY 2000 Acres Harvested</th></tr>
<tr><td>Clearcut</td><td>439</td></tr>
<tr><td>Seedcut (includes shelterwood & two-age cuts)</td><td>330</td></tr>
<tr><td>Prepcut (set up for shelterwood)</td><td>22</td></tr>
<tr><td>Thinning</td><td>623</td></tr>
<tr><td>Special Cut (e.g. savannahs, wildlife openings, etc.)</td><td>69</td></tr>
<tr><td>Total</td><td>1,483</td></tr>
</table>
</td></tr>
</table>

Timber Sale Inspections

Timber sale inspections were conducted routinely (see timber sale inspection reports in the timber sale files at each Ranger District).

Silviculture Treatments accomplished by Funding Source

Treatment	Knutson-Vanderburg Funded Acres	Appropriated Funds Acres
Site prep for natural regeneration	282	498
Certified regeneration without site prep	87	0
Pre-regen. harvest vine control	0	56
Timber stand improvement	177	727
Total	**546**	**1281**

MINERALS

The following table describes FY 2000 monitoring that reflects how well the Forest is making minerals available for exploration and development consistent with other appropriate resource uses and protection of the environment (*Forest Plan,* p. 38).

Table I. Minerals monitoring in Fiscal Year 2000.

Monitoring Item	Results
Mineral Operations Administered to Standard	Forty-five operations (51%) were administered to a standard that ensures compliance with approved operating plans (see Inspection Reports in the files for each mineral operation). Budget determines what proportion of mineral operations are to be administered in any year; 2000 direction was to administer 50%.
Mineral Receipts	Mineral receipt returns to the U.S. Treasury from oil and gas lease rent and royalties, including those from the Glady Gas Storage

Table I. Minerals monitoring in Fiscal Year 2000.

Monitoring Item	Results
	Field were about $557,400 (MMS Minerals Revenue Management, Federal mineral revenue disbursements identified by county of origin, Fiscal Year 2000, West Virginia – Onshore).
Seismic Shot Hole Prospecting	**Precision Geophysical Permit** (Mid-September 2000) The Forest has seen an increase in seismic prospecting for natural gas on the Forest. In response, an interdisciplinary team consisting of a geologist, wildlife biologist, hydrologist, and minerals assistant monitored portions of the seismic shot hole prospecting operation shortly after it had occurred. This monitoring was designed to ascertain whether – • Mitigation measures were implemented as planned. • Did they work to minimize or avoid adverse impacts to resources as intended? Precision Geophysical was issued a permit in the Fall of 1999 to conduct seismic prospecting along a line, called EDS-10, that ran from east of the Dolly Sods picnic area to the southeast, in part along the road on the ridge between Moyers and High Ridge Runs in Grant and Tucker Counties (see notes on field trip contained in the Forest Geologist's file on *Forest Plan* Monitoring FY 2000). The approved operation consisted of segments of line that would: • Detonate 5 pound charges placed in 20-foot deep holes; • Detonate clusters of 5 one third pound charges placed in holes 5 feet deep or less, called mini-holes; and • Have no shots detonated to achieve specific resource protection objectives (Decision Memo for Seismic Surveys in Canaan and Potomac Valleys, signed by District Ranger Schuppert in December 1999). The Team found the operation did not comply with the approved permit in several instances. These included deep shot holes drilled on the fill side of the Forest Road that had not been properly re-filled, and deep and mini-holes at spacing that varied from 220 feet approved distance. A letter was sent to the seismic permit holder identifying these short-comings, and open, deep shot holes were re-filled by the permit holder with the appropriate material. The Team also noted that where mini-holes had been drilled along cross-country sections of line EDS-10, and the flagging denoting

Table I. Minerals monitoring in Fiscal Year 2000.

Monitoring Item	Results
	the line had been removed, it was not possible to even find evidence that the shot hole prospecting had occurred. Although there appears to be little evidence of the seismic prospecting where the operation was conducted as approved, there was uncertainty about whether the measure that requires no shots to be detonated within 50 feet of live water is adequate to protect water quantity. This uncertainty comes about because there is no information available on the extent to which bedrock may be fractured by these size charges and result in dewatering of a surface stream. There are publications that address impacts of these size shots on sound modern structures such as homes or properly constructed water wells, and shots on more fragile structures like historical structures and heritage resource sites (Geophysical Operations, FS-589, October 1996), but none found to date that address bedrock fracturing or whether bedrock fracturing, if any, would lead to loss of surface water from a stream. The Forest knows of no instances where a surface stream has been dewatered as a result of or in the vicinity of seismic shot hole prospecting of the type and magnitude that has occurred here. The Forest will continue to investigate this issue. In the absence of published information, the Forest will monitor seismic operations located near live water (water in the stream at the time of shot hole prospecting) to look for evidence of noticeable stream dewatering after shot hole prospecting.

HERITAGE RESOURCES

The following describes FY 2000 monitoring that was conducted to gauge how well MNF management is protecting heritage resources from damage (*Forest Plan,* p. 40).

Table J. Heritage resources monitoring in FY 2000.

Monitoring Item	Results
Acres Surveyed/Sites Identified	During FY 2000, the MNF met the expectations outlined in the *Forest Plan* for identifying and protecting cultural resources. A total of 10,704 acres were surveyed, from which 56 heritage resources were identified.
Sites Monitored	Seventeen heritage resources were monitored. These activities were undertaken as part of the Forest's responsibilities under several legal authorities and as outlined in the *Forest Plan* (p. 49, Appendix Q).

Table J. Heritage resources monitoring in FY 2000.

Monitoring Item	Results
Man/Land Interactions	**Fernow Experimental Forest Survey** The ongoing program of site identification and evaluation undertaken by this office has contributed to the Forest's overall knowledge and understanding of man-land interactions in the uplands of West Virginia through the prehistoric and historic periods. During FY 2000, a MNF survey of the Fernow Experimental Forest, in particular, was an exceptional project. On a survey area of 3,800 acres, 25 new sites were identified, most of which were located at an elevational band encompassing a limestone base geology with chert outcrops, springs, rock shelters and caves. This has proven to be one of the richest areas for prehistory on the Forest, and further research here will in all likelihood contribute significantly to knowledge of upland adaptations in West Virginia.
Site Restoration	FY 2000 also saw the completion of a three-year partnership with the West Virginia Sierra Club that focused on the restoration and cleaning of the historic coke ovens in Thomas, West Virginia, which are part of the larger Blackwater Industrial Complex. The work at Thomas contributed to the Forest's knowledge of the industrial archaeology of the region. Portions of the Blackwater Industrial Complex are eligible for listing in the NRHP. The work at the coke ovens will contribute to the complex's overall significance and ultimate inclusion in the NRHP.

III. MONITORING RELATED TO EFFECTIVE PUBLIC SERVICE

PUBLIC SAFETY & SERVICES

The following describes FY 2000 monitoring conducted to gauge how well the MNF management is:

- Protecting natural resources of the Forest and the health and safety of visitors from damage or degradation.
- Improving the social welfare of citizens through education, training, employment, and public safety programs.
- Developing and maintaining a high level of open communication and understanding with the public.
- Permitting use of National Forest land by others, under special use or lease authorities, that is compatible with National Forest goals and objectives and will contribute to the improved quality of life for local residents.

- Improving the efficiency and effectiveness of National Forest Administration through land acquisition, exchange, or donation.
- Constructing and maintaining a transportation system that will allow efficient management and safe public use of National Forest lands (*Forest Plan*, p. 38-40).

Table K. FY 2000 monitoring of public services.

Monitoring Item	Results
Protecting/ Improving Facilities & Trails	**Accessibility Improvements** • Jess Judy Campground - Installed accessible portable toilets. • Jess Judy, Smokehole Picnic Ground, Big Bend Campground, and Spruce Knob Lake -- Issued contract for construction of accessible toilets. • Middle Mountain Cabins - Built an accessible access trail to the cook cabin and installed accessible cabinets and storage. • West Fork Rail Trail - Replaced decking on several railroad trestle bridges. • Replaced ten picnic tables with accessible models. • Gauley Ranger District Office - Remodeled the reception desk to provide a lower, accessible counter space. • Summit Lake Day Use Area - Contracted the construction of a new, accessible fishing pier and two accessible toilets. • Cranberry Mountain Nature Center - Contracted the construction of a new, concrete sidewalk, replacing a hazardous flagstone installation. • Lake Sherwood - Converted several picnic sites to campsites, providing accessible pathways and facilities. Accessible showers were also installed in the bathhouse. • Williams River - Constructed an accessible fishing walkway. • Tea Creek Meadow on the Highland Scenic Highway - Contracted the construction of an accessible interpretive trail.
Education, Training, Employment, and Public Safety programs **Developing and Maintaining Communication**	**Law Enforcement** Officers and Agents of Law Enforcement and Investigation staff (LE&I) have made numerous personal contacts at MNF visitor centers and public use areas. LE&I provided information to the public by coordinating with the Forest Public information Officers to provide announcements and news releases on cases heard by the courts where the USDA-FS is

Table K. FY 2000 monitoring of public services.

Monitoring Item	Results
	a party. LE&I also coordinated media contacts as they pertained to court cases with the US Attorney's office and acted as a liaison between the US Attorney's office and FS Public Affairs. LE&I coordinated with many federal, state, local, and private groups including (but not limited to) the Sheriffs' Departments of Counties within the proclamation boundaries, West Virginia State Police, WV-DNR, private security officers of companies that do business with the FS, local search and rescue, FBI, DEA, ATF, Appalachia HIDTA, US Attorney's in the Northern and Southern Districts of WV, US Marshals, US Probation, and others. Drug enforcement is a high priority for LE&I due to the impact or potential impact that exists as it relates to both resource and visitor protection. Timber and forest product thefts remained a priority for LE&I. One notable example resulted in the investigation, prosecution, and conviction of a group for stealing high value Cherry logs from locations throughout the MNF. Close coordination with the Forest Archeologist was necessary to protect the vast cultural resources on the Forest. Agents and Officers patrolled the Forest and made contacts with visitors at visitor centers, campgrounds, day use areas, etc. There continues to be a need to coordinate and work with search and rescue organizations as the results of incidents such as accidents, injuries, and lost persons through out NFS lands. **Visitor Expectations & Satisfaction** Generally, visitor satisfaction appeared to be good across the Forest. Customer Service Cards have been generally positive. Few visitor complaints were received during the year. Comment Cards and fee envelope comments have consistently indicated a high level of satisfaction with recreation experiences at developed sites. Anecdotal information indicates that conflicts are arising between horse users and other dispersed recreationists. Most MNF recreation visitors have a high level of satisfaction with the status quo of developed facilities. The MNF has no statistically reliable data on the broad scale satisfaction with the recreation program across the Forest vis-à-vis overall program direction, where emerging issues fit in relationship with the Forest's ability to provide for historic and newer uses. Spruce Knob – Seneca Rocks NRA Comment cards and visitor registration comments at the SRDC indicate a high level of satisfaction with the NRA and its

Table K. FY 2000 monitoring of public services.

<table>
<tr><th>Monitoring Item</th><th>Results</th></tr>
<tr><td></td><td>programs. A review of the goals, objectives and direction of the NRA along with a new business plan is being explored with the Forest Service Enterprise Team from Region Four. A new business plan and funding ideas are needed to make the SRDC, as well as the Cranberry Mountain Nature Center, economically self-sufficient. The management of the NRA will be an integral part of this business plan. The plan will likely include Fee Demo authority for the Visitor Centers to charge for some programs.</td></tr>
<tr><td>Permitting Use of NF Land</td><td>Civil Rights Reviews
Reviews at an organizational camp and outfitter-guide business were completed to ensure their operations were consistent with civil rights laws and policies (see special uses files).

Programmatic Analysis
Internal meetings were held to discuss social and resource impacts of outfitting and guiding. A decision was made to begin a programmatic analysis in 2002 for outfitting and guiding.</td></tr>
<tr><td>Land Adjustment</td><td>Several exchanges were completed during the past year:
<table>
<tr><th>Method</th><th>Case Name</th><th>Acres Acquired</th><th>County</th></tr>
<tr><td>Exchange</td><td>Nature Conservancy</td><td>235.00</td><td>Randolph</td></tr>
<tr><td>Exchange</td><td>North American Timber Corp.</td><td>4.06</td><td>Webster</td></tr>
<tr><td>Exchange</td><td>North American Timber Corp.</td><td>4.59</td><td>Randolph & Pocahontas</td></tr>
</table></td></tr>
<tr><td>Road Inventory</td><td>In FY 2000, surveys of maintenance level 1 and 2 roads were conducted to obtain up-to-date data on deferred and annual maintenance needs, and identify required capital improvements. Surveys of classified road should be completed in FY 2001. This information will be loaded into the Infrastructure database and used for reporting program management and for funding purposes. * For definition of Maintenance Levels see Forest Service Handbook 7709.58,12.3,Ex.01).</td></tr>
<tr><td>Road Improve-ments/Maintenance</td><td>As mentioned in the water quality section of this chapter, several road improvements were completed and monitored.</td></tr>
</table>

GRANTS, COOPERATIVE AGREEMENTS, AND OTHER AGREEMENTS

The following reflects some of the strides the MNF is making toward cooperating with, and coordinating plans with, other Federal, State, and local agencies and with private groups to improve the management of natural resources and reduce potential conflicts. For instance, besides surveys conducted by MNF wildlife staff, graduate students, college professors, and/or the West Virginia Division of Natural Resources Wildlife Resources Section perform studies and the public participates in the development of various management actions (MNF Partnerships and Agreements Program, 2001).

Table L. Partnerships the MNF was involved in FY 2000.

Monitoring Item	Results
Recreation	**Honeycomb Rock Interpretive Walk Grant** Executed August 16, 2000, this DG TEA-21 Grant with the WV Department of Transportation will allow an interpretive trail/walk to be completed by the end of Fiscal Year 2002. The total cost is expected to be $69,500 with WVDOH contributing $54,800. **Highland Scenic Highway Rest Area Facilities Enhancement** This DG TEA-21 Grant with the WVDOH was executed August 16, 2000 for the installation of universally accessible vault toilets at North Bend and Tea Creek; animal proof/accessible trashcans; and well development at Tea Creek. The WVDOH is contributing $57,920 of the $69,500 for this project. **Highland Scenic Highway Byway Interpretive and informational Enhancements Grant** The WVDOH is contributing $40,000 towards this $50,000 DG TEA-21 project. The grant was executed on August 16, 2000 to enhance tourism information and interpretation along the byway including exhibits, kiosks, mileage markers, signs, and brochures. **Cherry River & North Fork Cherry Trail Partnership Project** In partnership with the City of Richwood, a bridge over the Cherry River will be constructed, a 36-foot bridge over Desert Branch will be installed, and a 6 foot wide, 3-mile trail will be developed. This project is expected to cost about $119,000.
Protecting Resources & Communicating with the Public	**GIS Data Preparation Interagency Agreement** Executed September 20, 2000, this agreement with the Tennessee Valley Authority will allow more Forest cartographic feature data files to be prepared. These files help resource specialists assess effects of proposed projects and communicate with the public. **Pocahontas County Cranberry Nature Center Enhancement** Initiated August 31, 2000, this Memorandum of Understanding permits a cooperative relationship with the Pocahontas County Convention and Visitor Bureau to establish a staff position at the

Table L. Partnerships the MNF was involved in FY 2000.

	Cranberry Nature Center for education and service development.
Managing Diversity	**Yale and Penn State Cooperative Relation Development MOU** This MOU with Yale Forest Forum and Pennsylvania State University permits the Forest to work with these universities in regards to education, research, and development.
	Two-year Bat Study An Indiana bat study based on a data model was completed via a challenge cost share agreement with WV U and Westvaco.
Protecting Natural Resources	**Seneca Creek Design & Rehabilitation Agreements** This PA with the Canaan Valley Institute allows the assessment for Seneca Creek rehabilitation efforts and design.
	Shaver's Fork Watershed A PA with the Elk River Land Co./Cheat Mountain Trust/Mower Resources Inc. permits efforts to enhance, restore, and reclaim the Shaver's Fork Watershed.
	Appalachian Streamside/In-stream Management Executed in June 2000, this PA with the West Virginia University and Westvaco allows a study of streamside and in-stream management factors influencing Brook Trout.
	Allegheny Mountain Eco-region Non-perennial Study This PA with the Pennsylvania State University was initiated in August 2000 to conduct a study of the influence forest roads and timber harvests have on non-perennial channels.
	Restoration of Brushy Run Coal Mine/Access Road Under an interagency agreement with the USDI Office of Surface Mining Reclamation and Enforcement, the restoration of Brushy Run coalmine and access road was completed.
Protecting Heritage Resources	**Interpretation of Mouth of Seneca Prehistoric Site** Using a DG/Grant with the Eastern National Forests Interpretive Association, Native Americans of WV, Commonwealth Cultural Resource Group, and National Forest Foundation Chapter, a booklet on the mouth of Seneca Prehistoric Site will be completed. This grant also covers the development of a mobile display, making live presentations at Seneca Rocks Discovery Center, development of an internet site, and radio production.